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SCS ENGINEERS

# Results of Additional Subsurface Investigation

**Ghilotti Construction Company**
**246 Ghilotti Avenue**
**Santa Rosa, California**
**(SCDHS ID #00002017; NCRWQCB Site #1TSO501)**
**(Assessor's Parcel No. 134-171-053)**

**File Number 01203312.00**

**Prepared by:**

**SCS Engineers**
**3645 Westwind Boulevard**
**Santa Rosa, California 95403**

**To:**

**Mr. Cliff Ives**
**Sonoma County Department of Health Services**
**475 Aviation Blvd., Suite 220**
**Santa Rosa, California 95403**

## May 6, 2005

## LIMITATIONS/DISCLAIMER

This report has been prepared for Ghilotti Construction Company with specific application to additional subsurface exploration for the property located at 246 Ghilotti Avenue, Santa Rosa, California. This report has been prepared in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, in this or similar localities. The conclusions contained herein are based on analytical data, and points of exploration. The nature and extent of subsurface conditions may and likely do vary between borings and/or points of exploration. No other warranty, either expressed or implied, is made as to the professional conclusions presented herein.

Access to the property and the surrounding area was limited by buildings, roadways, underground and above-ground utilities and other miscellaneous site and site vicinity features. Therefore, the field exploration and points of subsurface observation were somewhat restricted.

Changes in site use and conditions may occur due to man-made changes or variations in rainfall, temperature, water usage, or other factors. Additional information which was not available to the consultant at the time of this assessment or changes which may occur on the site or in the surrounding area may result in modification to the site and the vicinity that would impact the summary presented herein. This report is not a legal opinion.

We trust this report provides the information you require at this time and we appreciate the opportunity to work with you on this project. If you require any additional information, or have any questions, please do not hesitate to contact SCS at (707) 546-9461.

KLC — 5-6-05

Kevin L. Coker REA 7887
CA registration fees paid through 06/30/05

Date

PROFESSIONAL GEOLOGIST ★ STEPHEN KNUTTEL No. 7674 ★ STATE OF CALIFORNIA

Stephen Knuttel — 6 MAY, 2005

Stephen Knuttel PG 7674
CA registration fees paid through 07/31/05

Date

## Introduction

SCS Engineers (SCS) is pleased to present the results of additional subsurface investigation performed at Ghilotti Construction Company, 246 Ghilotti Avenue, Santa Rosa, California. This work was performed in accordance with a Work Plan (PNEG, 2002b) which was subsequently approved by the Sonoma County Department of Health Services (SCDHS, 2002). Extensive delays were encountered due to issues surrounding approval of the access agreement for the work proposed in Ghilotti Avenue. The site is located as shown on the Site Location Map, Figure 1. General site features are shown on the Site Plan, Figure 2.

## Background

On March 19, 1992, Trans Tech Consultants (TTC) supervised Petroleum Engineering's removal of three underground storage tanks (USTs) from the site, consisting of one 2,000-gallon gasoline UST, one 8,000-gallon diesel fuel UST, and one 7,500-gallon diesel fuel UST (Ghilotti, 1995). Hydrocarbon odor emanated from the excavation, some sand on the bedding was stained, and a film of hydrocarbon product was observed on water in the excavation. Six sidewall soil samples, a soil sample from under each UST, a sample of soil from an excavation stockpile, and one water sample were obtained from the excavation. The approximate excavation limits are shown on Figure 2. Analytical results from the excavation pit sampling indicated an impact by petroleum-related hydrocarbons (Ghilotti, 1995).

On October 1, 1992, Ghilotti Construction Company (Ghilotti) extended and widened the north end of the tank excavation and removed soil below a concrete slab located between the UST excavation and the former fuel island. The excavation was extended to about fourteen feet below existing ground surface (bgs), was widened laterally two feet to the west, four feet to the north, and approximately fifteen feet to the east (Figure 2). The soil beneath the concrete slab was removed to depths of between approximately four feet and seven feet bgs (Ghilotti, 1995). TTC observed the removal of the additional impacted soils, the collection of soil samples for classification, and the field screening of soil using an organic vapor analyzer. On October 6, 1992, Ghilotti laterally extended the southeast portion of the excavation to remove additional impacted soil. TTC returned to the site on October 7, 1992 to collect excavation bottom samples. On October 13, 1992, Ghilotti deepened the eastern side of the excavation to depths between 11 and 14 feet bgs, in order to remove impacted soil detected in previously collected soil samples. Additional soil samples were collected from the bottom of the excavation. Laboratory analysis of soil samples collected from the final excavation limits indicated that concentrations of total petroleum hydrocarbons (TPH) as gasoline (g), as diesel (d), and benzene, toluene, ethyl benzene, and xylenes (BTEX) were non-detect (ND). The soil analytical results from the excavation activities are presented in Tables 1 and 2.

Three borings (B-1, B-2, and B-3) were drilled, sampled, and subsequently converted into monitoring wells MW-1, MW-2, and MW-3, respectively in November 1992 (Ghilotti, 1995). Soil analytical results are presented in Table 3.

## Sensitive Receptor Survey

A Sensitive Receptor Survey (SRS) was conducted for the site in September 1996 (PNEG, 1996). The subject site has a water supply well located approximately 400 feet east of the former UST locations (Figure 5). The on-site water supply well has been on a quarterly sampling program since 1998 and has been ND for all target analytes since April 2002 (Table 6). The Syar Asphalt site to the south of the Ghlotti property also has a water supply well located near the railroad tracks (Figure 5). Numerous residences to the north/northwest were noted to have water supply wells. Recent information obtained from an on-going investigation of the Royal Petroleum facility northwest of the site (365 Todd Road) reveals that many of the water supply wells in the vicinity have been connected to the City of Santa Rosa Water Utility system because of a fuel release from the Royal Petroleum facility located at 365 Todd Road. No sensitive receptors, other than the on-site water supply well, were noted within 500 feet of the former UST locations.

## Site Geology/Hydrogeology

The results of the January 2005 drilling program indicated a lithology generally consisting of sandy clay to sandy silt with gravel underlain by silty to sandy clays with gravel to the maximum depth explored of 21.5 feet bgs by hollow stem augers. Results from the one Cone Penetrometer Test (CPT) sounding on the site revealed silts and clays with minor sand layers to a depth of approximately 85 feet bgs. Free groundwater was encountered at depths ranging from approximately 9.5 to 11.5 feet bgs. Boring logs are presented in Appendix A.

Depth to groundwater has fluctuated seasonally during this investigation from approximately 3.5 feet bgs to 15.5 feet bgs. The groundwater flow direction on the site varies throughout the year, but has been generally to the southwest at gradients ranging from 0.03 to 0.002 (Table 5).

## Monitoring Well Installation - 2005

Seven additional monitoring wells (MW-04 through MW-10) were drilled, sampled and installed at the approximate locations shown on Figure 2 on February 1, 2, and 3, 2005. The borings for the monitoring wells were drilled using 8-inch diameter hollow stem augers and were converted into monitoring wells using 2-inch diameter Schedule 40 flush threaded PVC material. The screened interval in the monitoring wells consists of 0.020 inch machine slotted screen which extends from approximately 5 to 20 feet bgs. The depth of each boring is approximately 20.5-21.5 feet, with 15 feet of screen in each well. A #2/12 sand was used to create a filter pack around the screen. The filter pack was brought approximately 1 to 1.5 feet above the top of the screen, an approximate 2 foot bentonite seal was placed on top of the sand filter pack, and the wells were completed to the surface with a cement seal. Additional well completion details are presented in Appendix B.

The PVC well casing in each monitoring well extends to within 6 inches bgs and the casing is fitted with a waterproof locking cap. The wells are protected by traffic-rated, water-tight circular vaults.

Based on the results of the previous drilling programs, soil samples were collected and examined for lithology from each of the borings beginning at an approximate depth of 5 feet bgs, and every 5 feet thereafter to a maximum depth of approximately 21 feet bgs. Three to four soil samples from each of the borings were submitted for analysis. The ends of the sample tubes selected for analysis were covered with Teflon® Tape and sealed with plastic caps. Soil samples were labeled, stored under refrigerated conditions, and transported under Chain-of-Custody documentation to AS for analysis. AS is a California Department of Health Services certified laboratory for the analysis requested. Copies of AS' current certifications have been reviewed and are on file. The soil samples were collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol.

The augers used for drilling were pressure washed, and the small sampling equipment was washed in a detergent solution and rinsed to prevent cross contamination between borings. The drill cuttings were placed on and covered with plastic sheeting, pending disposal. The water generated by decontamination, well development, and sampling is stored at the site in steel 55-gallon UN/DOT-approved drums, pending disposal. Disposal of the soil and groundwater generated during the subsurface investigation activities is scheduled for disposal by Integrated Wastestream Management in the near future.

## Laboratory Analysis - Soil

Soil samples collected from the monitoring well borings were analyzed for TPH-g using EPA Method 8015M, for TPH-d by EPA Method 3550/8015M, and for BTEX and MTBE by EPA Method 8020.

## Well Development

The seven newly installed monitoring wells, MW-04 through MW-10, were swabbed to set the filter pack during well installation to the extent feasible. They were developed on February 2, 2005 using a surge block and a submersible field portable groundwater purging pump. Information obtained during well development was recorded on field sampling forms from which Well Development Records were generated, copies of which are presented in Appendix C.

## Groundwater Monitoring

Depth to groundwater measurements were collected from each of the previously existing wells (MW-1 through MW-3) in addition to the newly installed wells (MW-04 through MW-10) on February 11, 2005. Depths to groundwater ranged from approximately 3.5 to 6 feet bgs. The depth-to-groundwater measurements were combined with the well casing elevations to determine the groundwater flow direction and gradient. Casing and groundwater elevations are reported in feet relative to mean sea level. Depths to groundwater are expressed in feet. For the 1st Quarter 2005

sampling event, the groundwater flow direction was interpolated to be southwesterly at a calculated gradient of 0.002 feet per foot (Figure 3, Table 5).

## Groundwater Sampling

After the newly installed monitoring wells were developed, they were allowed to set for approximately 9 days prior to collecting depth to groundwater measurements. After depth to groundwater measurements were collected, MW-1 through MW-10 were checked for the presence of free product by subjective evidence and using an oil/water interface probe. No free product was reported during this monitoring event. The wells were then purged of approximately 3 wetted well casing volumes of groundwater, or at least 5 gallons, whichever was greater, using a submersible pump. Temperature, pH, conductivity, turbidity, and dissolved solids were measured during purging to help demonstrate that fresh groundwater was entering the well casing for sampling. Each well was allowed to recover prior to sampling. Groundwater samples were collected using a separate disposable bailer for each well, and were transferred into the appropriate containers supplied by the laboratory for analysis. The samples were labeled, stored under refrigerated conditions, and transported under Chain-of-Custody to AS. All samples were collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol. Information obtained during sampling was recorded on field sampling forms from which Well Purge Records were generated, copies of which are presented in Appendix C. The groundwater generated during the recent well sampling activities is stored at the site in 55-gallon UN/DOT-approved drums, pending disposal.

## Well Survey

The tops of the new monitoring well casings were surveyed under the supervision of a California licensed land surveyor to 0.01 feet to determine their elevations relative to mean sea level on March 9, 2005. In addition, the latitude and longitude of the monitoring wells has been determined to within 1 meter. The surveyed monitoring well elevations and monitoring well locations will be submitted electronically to the State Department of Water Resources Geotracker database.

## Cone Penetrometer Testing - 2005

PNEG[1] proposed to locate the second viable water-bearing zone beneath the site with the use of CPT equipment (PNEG, 2002b). The CPT rig mobilized to the site and conducted a lithology study at the approximate location indicated on Figure 2 on March 2, 2005. Water-bearing zones were identified at approximate depths of 38 and 82 feet bgs. Grab groundwater samples were collected at these depths. A copy of the laboratory report is presented in Appendix E. A copy of Precision Drilling & Sampling's CPT Report is presented in Appendix F.

[1] Pacific Northwest EnviroNet Group, Inc. (PNEG) became a part of SCS in July 2003.

## Laboratory Analysis

The groundwater samples collected from the newly installed wells were analyzed for TPH-g by EPA Method 8015M, and for BTEX and the five ether-based oxygenates (MTBE, DIPE, ETBE, TAME, and TBA) by EPA Method 8260B. The groundwater samples collected from MW-1 through MW-3 were analyzed for the five ether-based oxygenates only. The grab groundwater samples collected from CPT-01 were analyzed for TPH-g by EPA Method 5030/8015M, for TPH-d by EPA Method 3510/8015M, and for BTEX and the five ether-based oxygenates by EPA Method 8260B.

## Soil Analytical Results

The soil samples collected from MW-04 through MW-10 were below the laboratory RDL for all target analytes. Soil analytical results are presented in Table 4.

## Groundwater Analytical Results

Four of the seven newly installed wells contained MTBE above the laboratory RDL. MTBE was detected at concentrations of 1.9 micrograms per liter ($\mu$g/L) in MW-04, 6.9 $\mu$g/L in MW-07, 3.2 $\mu$g/L in MW-09, and 20 $\mu$g/L in MW-10. MTBE was not detected above the laboratory RDL in MW-05, MW-06 and MW-08. The additional fuel oxygenates and TPH-g were not detected above the laboratory RDL in any of the monitoring well groundwater samples. Xylenes were detected in the sample collected from MW-04 at a concentration of 1.1 $\mu$g/L; the BTEX constituents were below the laboratory RDL in all other samples. The sample collected at a depth of 38 feet bgs from the CPT sounding contained MTBE at a concentration of 2.8 $\mu$g/L and the deeper sample collected at a depth of 82 feet bgs was below the laboratory report detection limit (RDL) for all target analytes.

## Discussion

As indicated on Figure 4, the lateral extent of the MTBE groundwater impact has not been adequately assessed to the west/southwest of MW-10 and to the north of MW-07. The source of the MTBE (2.8 $\mu$g/L) detected in the CPT groundwater sample at 38 feet bgs is suspect at this time as it may have been caused by downward migration of groundwater from the upper water-bearing interval.

## Recommendations

SCS recommends continued monitoring at the site to confirm the recent analytical results generated from the 7 newly installed wells MTBE and BTEX by 8260. Base on current and past results from the site, MTBE and possible trace concentrations of BTEX appear to be the only constituents of concern and it is therefore recommended that the samples from all the wells be monitored for only MTBE and BTEX by EPA Method 8260. Upon completion of one full hydrologic cycle of sampling

of the new wells, additional monitoring points to the west/southwest of MW-10 and to the north of MW-7 may be required in order to adequately assess the lateral extent of the MTBE impacted groundwater or a request for site closure will be presented.

**Attachments**
**File No. 01203312.00**

Figure 1: Site Location Map
Figure 2: Site Plan
Figure 3: Site Plan - Groundwater Flow Direction and Gradient for 02/11/05
Figure 4: Isoconcentration Map - MTBE in Groundwater for 02/11/05
Figure 5: Sensitive Receptors Map
Key to Diagram and Tables
Diagram A: MTBE & Groundwater Elevation vs Time
Table 1: Historical Soil Excavation, Stockpile and Groundwater Analytical Results
Table 2: Historical Excavation Soil Sample Results
Table 3: Soil Sample Results - Borings B-1 through B-3 (MW-1 through MW-3)
Table 4: Soil Analytical Results – Monitoring Wells - 2005
Table 5: Groundwater Flow Direction and Gradient – 1996 to present
Table 6: Domestic Well Analytical Results
Table 7: Groundwater Analytical Results – Monitoring Wells
Table 8: CPT Groundwater Analytical Results

**Appendices**
**File 01203312.00**

Appendix A
- Unified Soil Classification System Chart and Boring Log Legend
- Boring Logs for MW-04 through MW-10
- DWR 188 Forms for MW-04 through MW-10

Appendix B
- Well Completion Diagrams for MW-04 through MW-10

Appendix C
- Well Development Records, dated February 2, 2005
- Well Purge Records, dated February 11, 2005

Appendix D
- Well Survey Report, dated March 10, 2005

Appendix E
- Analytical Sciences Report #5020206, dated February 11, 2005
- Analytical Sciences Report #5020207, dated February 11, 2005
- Analytical Sciences Report #5020317, dated February 16, 2005
- Analytical Sciences Report #5021401, dated February 23, 2005
- Analytical Sciences Report #5030308, dated March 18, 2005

Appendix F
Precision Drilling & Sampling CPT Report

**Reference List**
**File No. 01203312.00**

Ghilotti, 1995. Personal communication between D. Ghilotti and L. Mackey-Taverner, June 26.
PNEG, 1996. Monitoring Report, Sensitive Site Receptor Survey, and Request for Site Closure, 246 Ghilotti Avenue, Santa Rosa, California, October 15.
PNEG, 1997a. Monitoring Report and Request for Site Closure, 246 Ghilotti Avenue, Santa Rosa, February 5.
PNEG, 1997b. September 1997 Semiannual Groundwater Monitoring Report and Request for Site Closure, 246 Ghilotti Avenue, Santa Rosa, October 17.
PNEG, 1998a. Semiannual Groundwater Monitoring Report for June 1998 Sampling, 246 Ghilotti Avenue, Santa Rosa, August 1998.
PNEG, 1999a. Status Report for 246 Ghilotti Avenue, Santa Rosa, December 14.
PNEG, 1999b. Results of the December 1999 Quarterly Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, February 28.
PNEG, 2000a. Results of the March 2000 Quarterly Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, May 31.
PNEG, 2000b. Results of the 2nd Quarter 2000 Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, August 7.
PNEG, 2000c. Results of the 3rd Quarter 2000 Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, December 11.
PNEG, 2001a. Results of the 4th Quarter 2000 Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, February 23.
PNEG, 2001b. Results of the 2nd Quarter 2001 Groundwater Monitoring and Sampling and Domestic Well Sampling Event at 246 Ghilotti Avenue, Santa Rosa, June 6.
PNEG, 2001c. Results of the 3rd Quarter 2001 Groundwater Monitoring and Sampling and Domestic Well Sampling Event at 246 Ghilotti Avenue, Santa Rosa, September 7.
PNEG, 2001d. Results of the 4th Quarter 2001 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, November 30.
PNEG, 2002a. Results of the 1st Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, March 20.
PNEG, 2002b. Work Plan to Define the Lateral and Vertical Extent of MTBE Contamination- 246 Ghilotti Avenue, Santa Rosa, California, May 28.
PNEG, 2002c. Results of the 2nd Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, June 6.
PNEG, 2002d. Results of the 3rd Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, August 14.
PNEG, 2002e. Results of the 4th Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, November 13.
PNEG, 2003a. Results of the 1st Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, March 17.

PNEG, 2003b. Results of the 2nd Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, May 8.
SCDHS, 2002. Work Plan approval from C. Ives, dated June 24.
SCS, 2003a. Results of the 3rd Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, August 13.
SCS, 2003b. Results of the 4th Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, November 20.
SCS, 2004a. Results of the 1st Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, January 29.
SCS, 2004b. Results of the 2nd Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, May 7.
SCS, 2004c. Results of the 3rd Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, August 9.
SCS, 2004d. Results of the 4th Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, December 29.

**Distribution List**
**File No. 01203312.00**

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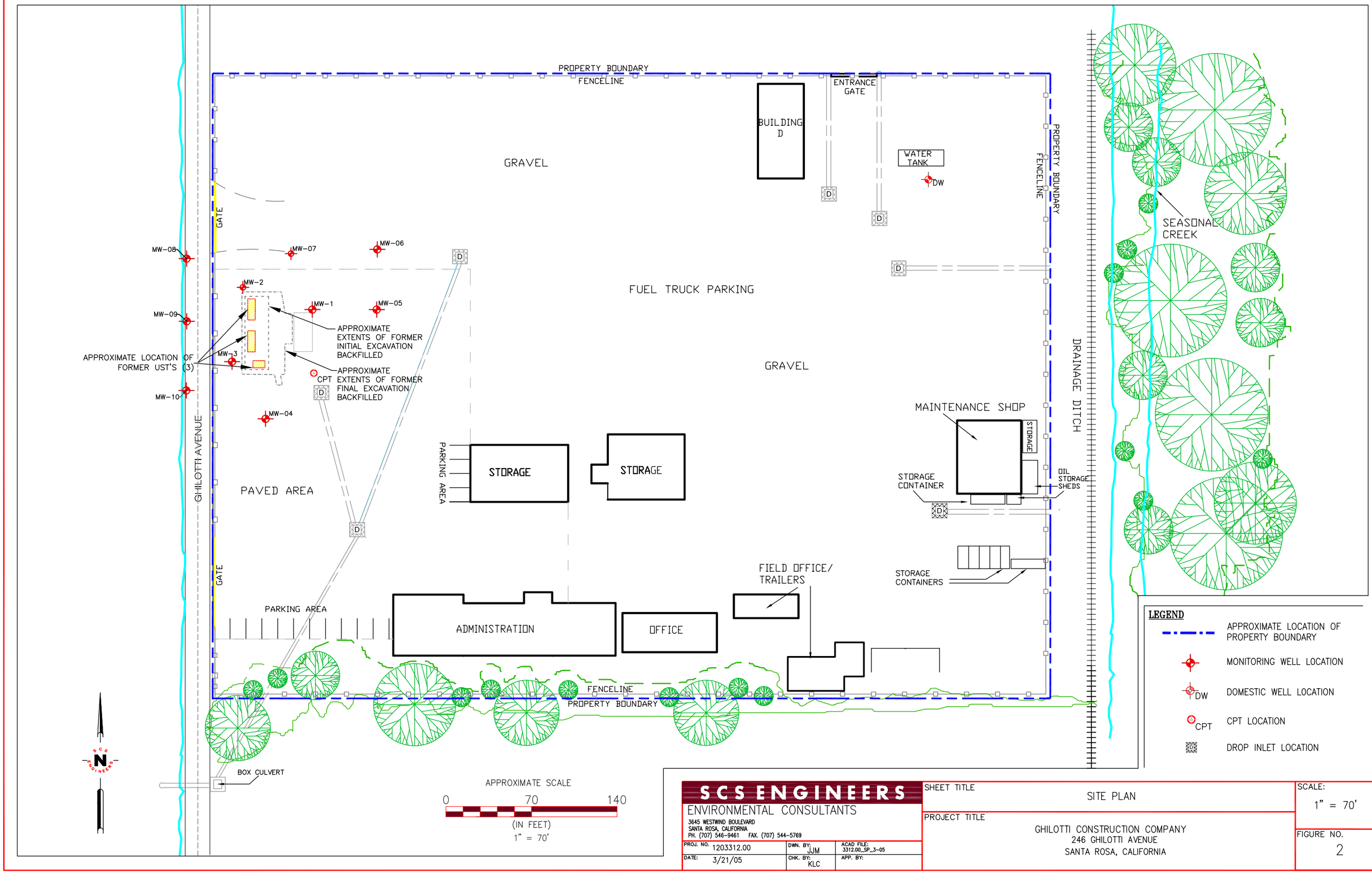
# SITE LOCATION MAP

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California

APPROX. SCALE

FIGURE
1

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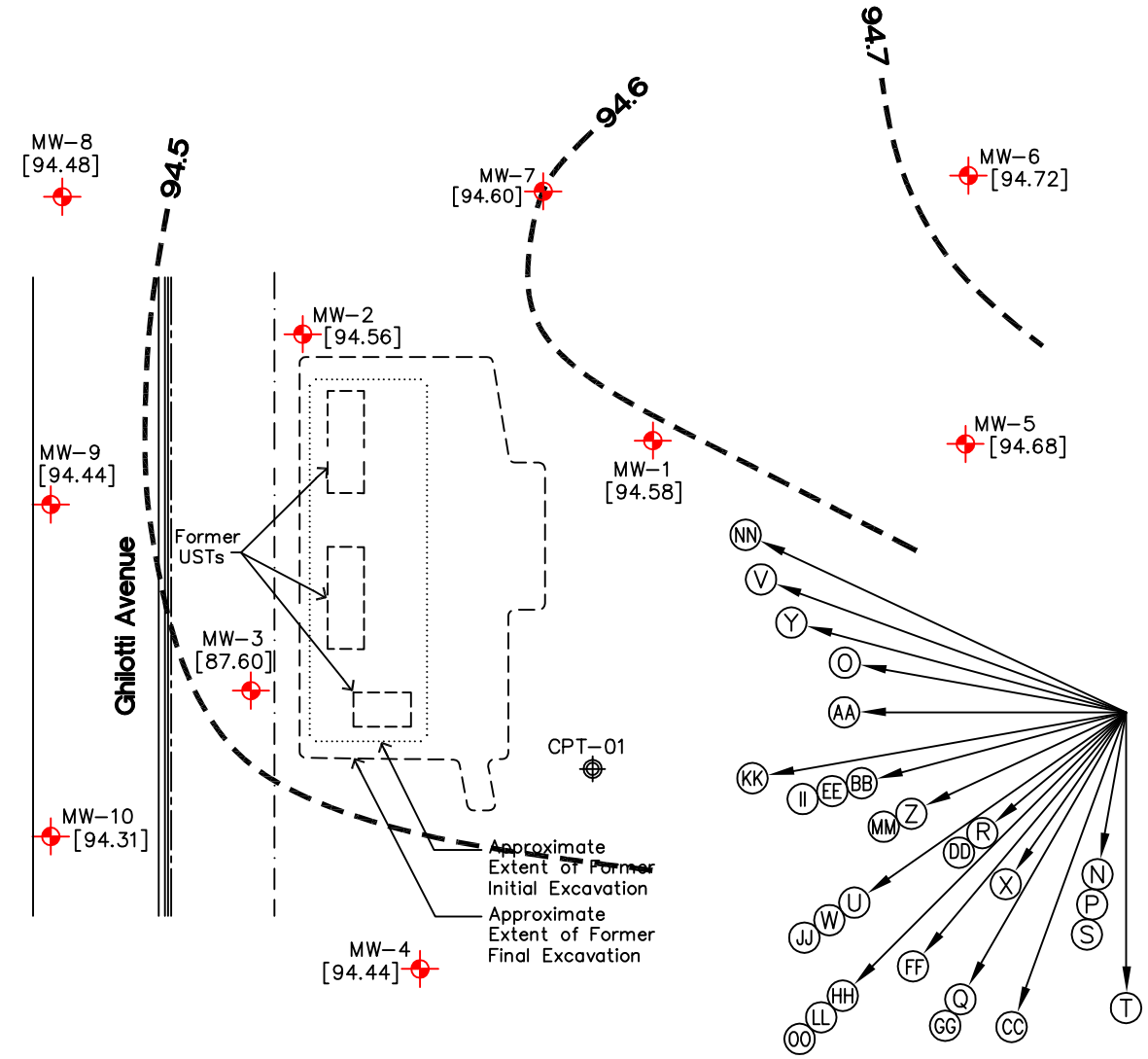
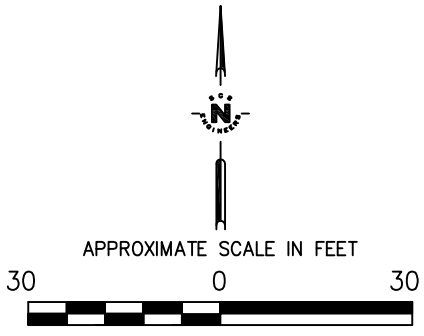
SHEET TITLE
SITE PLAN

PROJECT TITLE
GHILOTTI CONSTRUCTION COMPANY
246 GHILOTTI AVENUE
SANTA ROSA, CALIFORNIA

SCALE:
1" = 70'

FIGURE NO.
2




## LEGEND

MW-n Monitoring Well Location
[XX.XX] Groundwater Elevation

Note: Groundwater elevations are in feet above mean sea level (National Geodetic Vertical Datum, 1929).

NOTES: MWs denoted in red are used to determine flow direction and gradient.

Cone Penetrometer Test Sounding (CPT) Location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SHEET TITLE: SITE PLAN
GROUNDWATER FLOW DIRECTION AND GRADIENT FOR 2/11/05

PROJECT TITLE: GHILOTTI CONSTRUCTION COMPANY
246 GHILOTTI AVENUE
SANTA ROSA, CALIFORNIA

SCALE: 1" = 30'

FIGURE NO.: 3
SHEET 1 OF 2

# GROUNDWATER FLOW LEGEND

Estimated Groundwater Flow Direction → (A)

Gradient Contour (Interval = 0.1 ft) – – – – – –

| Identifier Tag | Date | Est. Flow Direction | Gradient Slope |
|---|---|---|---|
| (N) | 6/24/96 | S10°W | i = 0.005 |
| (O) | 12/20/96 | N80°W | i = 0.003 |
| (P) | 4/18/97 | S10°W | i = 0.005 |
| (Q) | 9/11/97 | S30°W | i = 0.006 |
| (R) | 6/19/98 | S48°W | i = 0.002 |
| (S) | 3/3/99 | S10°W | i = 0.002 |
| (T) | 6/2/99 | Due South | i = 0.008 |
| (U) | 12/28/99 | S55°W | i = 0.003 |
| (V) | 3/23/00 | N68°W | i = 0.03 |
| (W) | 6/20/00 | S55°W | i = 0.003 |
| (X) | 10/3/00 | S35°W | i = 0.005 |
| (Y) | 1/9/01 | N75°W | i = 0.002 |
| (Z) | 4/10/01 | S65°W | i = 0.003 |
| (AA) | 7/11/01 | West | i = 0.003 |
| (BB) | 10/10/01 | S75°W | i = 0.004 |
| (CC) | 1/9/02 | S20°W | i = 0.003 |
| (DD) | 4/5/02 | S50°W | i = 0.002 |
| (EE) | 7/3/02 | S75°W | i = 0.004 |
| (FF) | 10/24/02 | S40°W | i = 0.005 |
| (GG) | 1/22/03 | S30°W | i = 0.002 |
| (HH) | 4/17/03 | S45°W | i = 0.002 |
| (II) | 7/14/03 | S75°W | i = 0.003 |
| (JJ) | 10/7/03 | S55°W | i = 0.004 |
| (KK) | 1/2/04 | S80°W | i = 0.002 |
| (LL) | 4/6/04 | S45°W | i = 0.002 |
| (MM) | 7/7/04 | S65°W | i = 0.003 |
| (NN) | 11/11/04 | N60°W | i = 0.003 |
| (OO) | 2/11/05 | SW | i = 0.002 |


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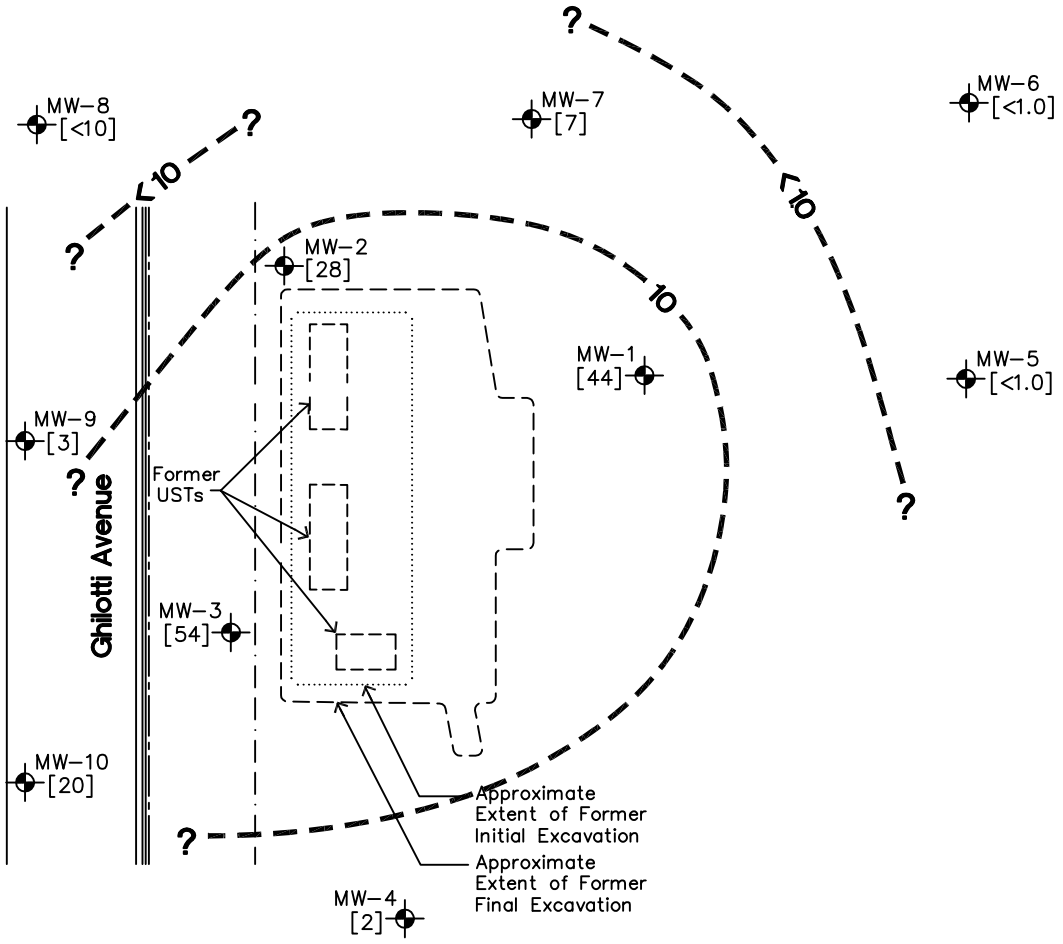
GROUNDWATER FLOW DIRECTION AND GRADIENT FOR 2/11/05

PROJECT TITLE: GHILOTTI CONSTRUCTION COMPANY
246 GHILOTTI AVENUE
SANTA ROSA, CALIFORNIA

SCALE: 1" = 30'

FIGURE NO.: 3

SHEET 2 OF 2




N

APPROXIMATE SCALE IN FEET

30 0 30

**LEGEND**

- Monitoring Well Location
- Isoconcentration Line
  MTBE, ug/L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SHEET TITLE: ISOCONCENTRATION MAP
MTBE IN GROUNDWATER FOR 2/11/05

PROJECT TITLE: GHILOTTI CONSTRUCTION COMPANY
246 GHILOTTI AVENUE
SANTA ROSA, CALIFORNIA

SCALE: 1" = 30'

FIGURE NO.: 4


*SOURCE:* CITY OF SANTA ROSA GIS WEBSITE; 2004 4' AERIAL.


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SHEET TITLE
SENSITIVE RECEPTORS MAP

PROJECT TITLE
GHILLOTTI CONSTRUCION COMPANY
246 GHILOTTI AVENUE
SANTA ROSA, CALIFORNIA

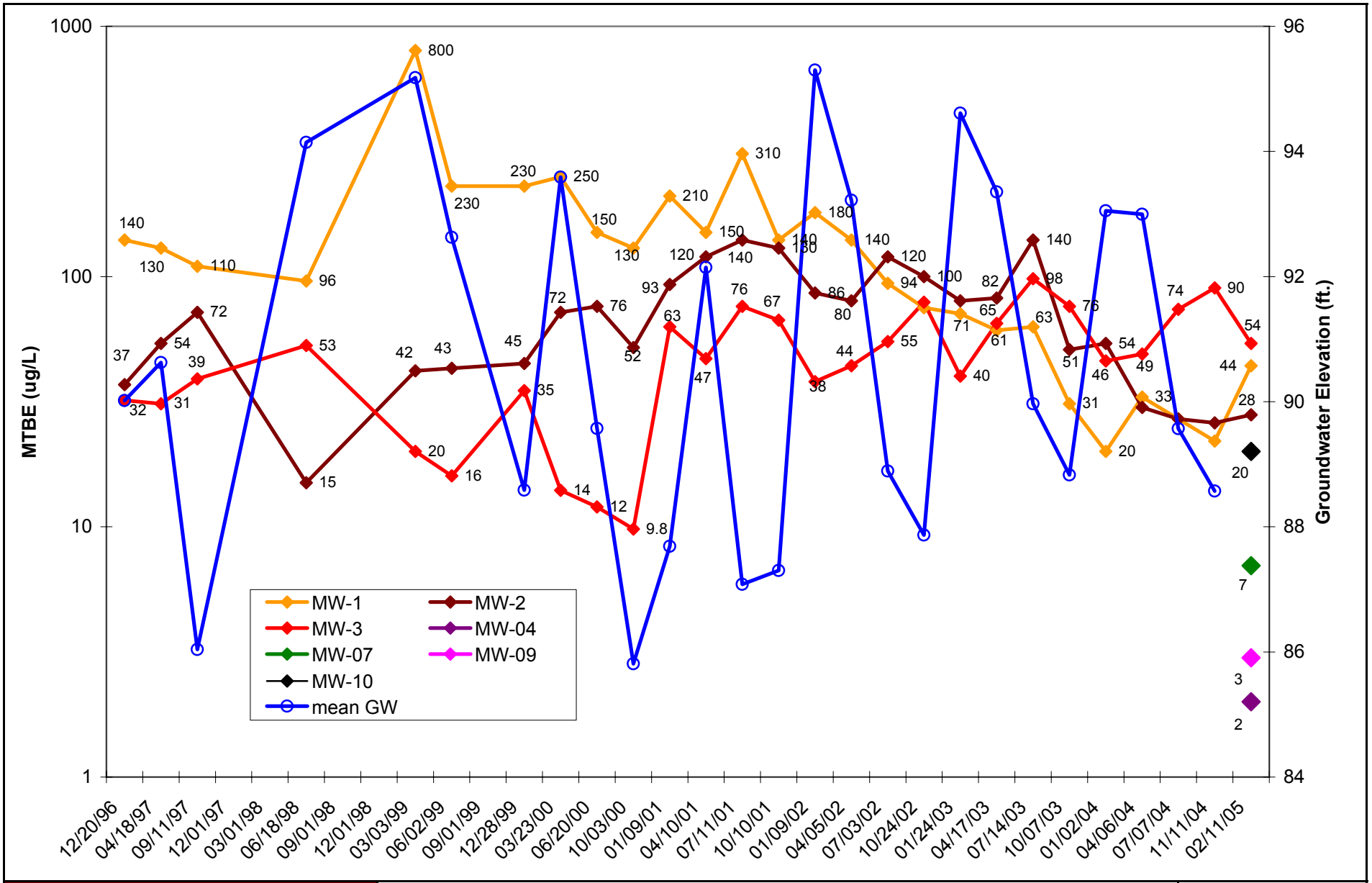
SCALE:
1" = 300' ±

FIGURE NO.
5

**Key to Diagram and Tables**
**246 Ghilotti Avenue, Santa Rosa**

| | | |
|---|---|---|
| TPH-g | = | Total petroleum hydrocarbons in the gasoline range |
| B | = | Benzene |
| T | = | Toluene |
| E | = | Ethylbenzene |
| X | = | Xylenes |
| MTBE | = | Methyl tertiary butyl ether |
| Five Oxys | = | Five ether-based oxygenates [diisopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tert-amyl methyl ether (TAME), MTBE, and tert-butyl alcohol (TBA)] |
| EDC | = | Ethylene dichloride[2] |
| EDB | = | Ethylene dibromide[3] |
| Pb Scavs | = | Lead scavengers (EDC, EDB) |
| mg/kg | = | Milligrams per kilogram |
| $\mu$g/L | = | Micrograms per liter |

[2] EDC has been referred to as 1,2-dichloroethane (1,2-DCA) in previous reports.
[3] EDB has been referred to as 1,2-dibromoethane in previous reports.




| | | |
|---|---|---|
| **SCS ENGINEERS** | **MTBE & Groundwater Elevation vs Time** | **DIAGRAM** |
| 3645 WESTWIND BOULEVARD<br>SANTA ROSA, CALIFORNIA<br>PH: (707) 546-9461 FX: (707)544-5769 | Ghilotti Construction Company<br>246 Ghilotti Avenue<br>Santa Rosa, California | **A** |
| Drawn By: KLC / File Name: MTBE-GW | Job Number: 01203312.00 | DATE: 02/23/05 |

**Table 1: Historical Soil Excavation, Stockpile and Groundwater Sample Analytical Results**
**246 Ghilotti Avenue, Santa Rosa**

| Sample ID | Date | TPH-g | TPH-d | Lead | B | T | E | X |
|---|---|---|---|---|---|---|---|---|
| | | ----------mg/kg---------- | | | | | | |
| SW-1E | 03/19/92 | ND | ----- | 5.3 | ND | ND | ND | ND |
| SW-1W | 03/19/92 | ND | ----- | 5.3 | ND | ND | ND | ND |
| SW-2E | 03/19/92 | ----- | ND | ----- | ND | ND | ND | ND |
| SW-2W | 03/19/92 | ----- | ND | ----- | ND | ND | ND | ND |
| SW-3E | 03/19/92 | ----- | 12 | ----- | ND | ND | ND | ND |
| SW-3W | 03/19/92 | ----- | 10* | ----- | ND | ND | ND | ND |
| SP-1 | 03/19/92 | 380** | ----- | 18 | ND | ND | ND | 0.056 |
| SP-2 | 03/19/92 | ----- | 970 | ----- | ND | 0.11 | 0.08 | 0.43 |
| SP-3 | 03/19/92 | ----- | 1800 | ----- | ND | ND | ND | ND |
| FI-1 | 03/19/92 | 170** | 1100 | 5.1 | ND | ND | ND | 0.12 |
| **Groundwater** | ----------mg/L---------- | | | | | | | |
| GW-1 | 3/19/92 | 14** | 38 | 0.018 | 0.011 | ND | 0.0059 | 0.024 |

* The positive result for TPH-d appears to be a heavier hydrocarbon than diesel.
** The positive result for TPH-g appears to be a heavier hydrocarbon than gasoline.

**Table 2: Historical Excavation Soil Sample Results**
**246 Ghilotti Avenue, Santa Rosa**

| Sample ID | Date | TPH-g | TPH-d | Lead | B | T | E | X |
|---|---|---|---|---|---|---|---|---|
| | | ----------mg/kg---------- | | | | | | |
| SW-1 | 10/01/92 | ND | ND | 4.5 | ND | ND | ND | ND |
| SW-2 | 10/01/92 | ND | ND | 4.1 | ND | ND | ND | ND |
| SW-3 | 10/01/92 | ND | ND | 6 | ND | ND | ND | ND |
| SW-4 | 10/01/92 | ND | ND | 4.1 | ND | ND | ND | ND |
| B-1 | 10/01/92 | ND | ND | 6.1 | ND | ND | ND | ND |
| B-2 | 10/01/92 | ND | 1.8 | 3.8 | ND | ND | ND | ND |
| B-3 | 10/07/92 | 1.8* | 88 | 6.2 | ND | ND | ND | ND |
| B-4 | 10/07/92 | ND | 23 | 7.4 | ND | ND | ND | ND |
| B-5 | 10/07/92 | ND | ND | 4.9 | ND | ND | ND | ND |
| B-6 | 10/13/92 | ND | ND | 6.3 | ND | ND | ND | ND |
| B-7 | 10/13/92 | ND | ND | 6.9 | ND | ND | ND | ND |
| B-8 | 10/13/92 | ND | ND | 5.9 | ND | ND | ND | ND |

* The positive result for TPH-g appears to be a heavier hydrocarbon than gasoline.

**Table 3: Soil Sample Results - Borings B-1 through B-3 (MW-1 through MW-3)**
**246 Ghilotti Avenue, Santa Rosa**

| Sample ID | Date | TPH-g | TPH-d | Lead | B | T | E | X |
|---|---|---|---|---|---|---|---|---|
| | | ----------mg/kg---------- | | | | | | |
| B-1-9.0 | 11/09/92 | ND | ND | 4.0 | ND | ND | ND | ND |
| B-2-8.0 | | ND | ND | 4.8 | ND | ND | ND | ND |
| B-3-9.5 | | ND | ND | 4.9 | ND | ND | ND | ND |

ND = Not Detected

## Table 4: Soil Analytical Results - Monitoring Wells - 2005
## 246 Ghilotti Avenue, Santa Rosa

| ID | Date | TPH-g | TPH-d | B | T | E | X | MTBE |
|---|---|---|---|---|---|---|---|---|
| | | mg/kg | | | | | | |
| MW-04@5.5' | 02/01/05 | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-04@10.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-04@15.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-04@20.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-05@5.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-05@11.0' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-05@15.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-06@5.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-06@10.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-06@15.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-07@6.5' | 02/02/05 | <1.0 | NA** | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-07@11.0'* | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-07@15.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-08@5.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-08@10.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-08@15.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-09@5.5' | 02/03/05 | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-09@11.0' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-09@16.0' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-10@6.0' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-10@10.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |
| MW-10@15.5' | | <1.0 | <5.0 | <0.005 | <0.005 | <0.005 | <0.0015 | <0.0025 |

* Contained lead at a concentration of 3.6 mg/kg.
** Limited sample recovery.
NA = Not Analyzed

## Table 5: Groundwater Flow Direction and Gradient - 1996 to Present
## 246 Ghilotti Avenue, Santa Rosa

| Well # | Date Measured | Top of Casing Elevation (ft. > msl) | Depth to Groundwater (feet) | Water Level Elevation (ft. > msl) | Groundwater Flow Direction & Gradient (i) |
|---|---|---|---|---|---|
| MW-1 | 06/24/96 | 99.48 | 7.42 | 92.06 | S10°W i = 0.005 |
| MW-2 | | 99.77 | 7.67 | 92.1 | |
| MW-3 | | 99.38 | 7.58 | 91.8 | |
| MW-1 | 12/20/96 | 99.48 | 10.00 | 89.48 | N80°W i = 0.003 |
| MW-2 | | 99.77 | 10.5 | 89.27 | |
| MW-3 | | 99.38 | 10.1 | 89.28 | |
| MW-1 | 04/18/97 | 99.48 | 7.19 | 92.29 | S10°W i = 0.005 |
| MW-2 | | 99.77 | 7.41 | 92.36 | |
| MW-3 | | 99.38 | 7.34 | 92.04 | |
| MW-1 | 09/11/97 | 99.48 | 13.29 | 86.19 | S30°W i = 0.006 |
| MW-2 | | 99.77 | 13.65 | 86.12 | |
| MW-3 | | 99.38 | 13.57 | 85.81 | |
| MW-1 | 06/19/98 | 99.48 | 5.28 | 94.2 | S48°W i = 0.002 |
| MW-2 | | 99.77 | 5.62 | 94.15 | |
| MW-3 | | 99.38 | 5.3 | 94.08 | |
| MW-1 | 03/03/99 | 99.48 | 3.35 | 96.13 | S10°W i = 0.002 |
| MW-2 | | 99.77 | 3.57 | 96.2 | |
| MW-3 | | 99.38 | 3.33 | 96.05 | |
| MW-1 | 06/02/99 | 99.48 | 6.79 | 92.69 | Due South i = 0.008 |
| MW-2 | | 99.77 | 6.91 | 92.86 | |
| MW-3 | | 99.38 | 7.04 | 92.34 | |
| MW-1 | 12/28/99 | 99.48 | 12.73 | 86.75 | S55°W i = 0.003 |
| MW-2 | | 99.77 | 13.16 | 86.61 | |
| MW-3 | | 99.38 | 12.86 | 86.52 | |
| MW-1 | 03/23/00 | 99.48 | 4.85 | 94.63 | N68°W i = 0.03 |
| MW-2 | | 99.77 | 5.33 | 94.44 | |
| MW-3 | | 99.38 | 4.91 | 94.47 | |
| MW-1 | 06/20/00 | 99.48 | 8.44 | 91.04 | S55°W i = 0.003 |
| MW-2 | | 99.77 | 8.84 | 90.93 | |
| MW-3 | | 99.38 | 8.57 | 90.81 | |
| MW-1 | 10/03/00 | 99.48 | 13.6 | 85.88 | S35°W i = 0.005 |
| MW-2 | | 99.77 | 13.98 | 85.79 | |
| MW-3 | | 99.38 | 13.87 | 85.51 | |
| MW-1 | 01/09/01 | 99.48 | 13.31 | 86.17 | N75°W i = 0.002 |
| MW-2 | | 99.77 | 13.71 | 86.06 | |
| MW-3 | | 99.38 | 13.31 | 86.07 | |
| MW-1 | 04/10/01 | 99.48 | 6.79 | 92.69 | S65°W i = 0.003 |
| MW-2 | | 99.77 | 7.22 | 92.55 | |
| MW-3 | | 99.38 | 6.92 | 92.46 | |
| MW-1 | 07/11/01 | 99.48 | 11.39 | 88.09 | West i = 0.003 |
| MW-2 | | 99.77 | 11.87 | 87.90 | |
| MW-3 | | 99.38 | 11.50 | 87.88 | |
| MW-1 | 10/10/01 | 99.48 | 14.78 | 84.70 | S75°W i = 0.004 |
| MW-2 | | 99.77 | 15.24 | 84.53 | |
| MW-3 | | 99.38 | 14.93 | 84.45 | |
| MW-1 | 01/09/02 | 99.48 | 3.75 | 95.73 | S20°W i = 0.003 |
| MW-2 | | 99.77 | 4.06 | 95.71 | |
| MW-3 | | 99.38 | 3.85 | 95.53 | |

## Table 5: Groundwater Flow Direction and Gradient - 1996 to Present
## 246 Ghilotti Avenue, Santa Rosa

| Well # | Date Measured | Top of Casing Elevation (ft. > msl) | Depth to Groundwater (feet) | Water Level Elevation (ft. > msl) | Groundwater Flow Direction & Gradient (i) |
|---|---|---|---|---|---|
| MW-1 | 04/05/02 | 99.48 | 5.09 | 94.39 | S50°W i = 0.002 |
| MW-2 | | 99.77 | 5.44 | 94.33 | |
| MW-3 | | 99.38 | 5.15 | 94.23 | |
| MW-1 | 07/03/02 | 99.48 | 9.25 | 90.23 | S75°W i = 0.004 |
| MW-2 | | 99.77 | 9.74 | 90.03 | |
| MW-3 | | 99.38 | 9.44 | 89.94 | |
| MW-1 | 10/24/02 | 99.48 | 13.70 | 85.78 | S40°W i = 0.005 |
| MW-2 | | 99.77 | 14.13 | 85.64 | |
| MW-3 | | 99.38 | 14.01 | 85.37 | |
| MW-1 | 01/22/03 | 99.48 | 4.65 | 94.83 | S30°W i = 0.002 |
| MW-2 | | 99.77 | 4.97 | 94.80 | |
| MW-3 | | 99.38 | 4.69 | 94.69 | |
| MW-1 | 04/17/03 | 99.48 | 5.20 | 94.28 | S45°W i = 0.002 |
| MW-2 | | 99.77 | 5.55 | 94.22 | |
| MW-3 | | 99.38 | 5.25 | 94.13 | |
| MW-1 | 07/14/03 | 99.48 | 8.44 | 91.04 | S75°W i = 0.003 |
| MW-2 | | 99.77 | 8.90 | 90.87 | |
| MW-3 | | 99.38 | 8.59 | 90.79 | |
| MW-1 | 10/07/03 | 99.48 | 11.75 | 87.73 | S55°W i = 0.004 |
| MW-2 | | 99.77 | 12.01 | 87.76 | |
| MW-3 | | 99.38 | 12.21 | 87.17 | |
| MW-1 | 01/02/04 | 99.48 | 6.68 | 92.80 | S80°W i = 0.002 |
| MW-2 | | 99.77 | 7.08 | 92.69 | |
| MW-3 | | 99.38 | 6.72 | 92.66 | |
| MW-1 | 04/06/04 | 99.48 | 5.21 | 94.27 | S45°W i = 0.002 |
| MW-2 | | 99.77 | 5.58 | 94.19 | |
| MW-3 | | 99.38 | 5.32 | 94.06 | |
| MW-1 | 07/07/04 | 99.48 | 9.71 | 89.77 | S65°W i = 0.003 |
| MW-2 | | 99.77 | 10.18 | 89.59 | |
| MW-3 | | 99.38 | 9.92 | 89.46 | |
| MW-1 | 11/23/04 | 99.48 | 11.71 | 87.77 | N60°W i = 0.003 |
| MW-2 | | 99.77 | 12.17 | 87.60 | |
| MW-3 | | 99.38 | 11.73 | 87.65 | |
| MW-1 | 02/11/05* | 99.48 | 4.90 | 94.58 | SW i = 0.002 |
| MW-2 | | 99.77 | 5.21 | 94.56 | |
| MW-3 | | 99.38 | 4.86 | 94.52 | |
| MW-04 | | 98.31 | 3.87 | 94.44 | |
| MW-05 | | 100.20 | 5.52 | 94.68 | |
| MW-06 | | 100.95 | 6.23 | 94.72 | |
| MW-07 | | 100.17 | 5.57 | 94.60 | |
| MW-08 | | 98.37 | 3.89 | 94.48 | |
| MW-09 | | 98.46 | 4.02 | 94.44 | |
| MW-10 | | 98.04 | 3.73 | 94.31 | |

Note: Groundwater flow direction is rounded to the nearest 5° beginning in 1996 except for the 06/19/98 and 03/23/00 calculations.

* MW-04 through MW-10 were surveyed to msl on March 9, 2005.

## Table 6: Domestic Well Analytical Results
## 246 Ghilotti Avenue, Santa Rosa

| ID | Date Sampled | TPH-g | TPH-d | B | T | E | X | MTBE* | OTHER OXY'S* |
|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | | | | | | | |
| DW-1 | 07/21/98 | <50 | NA | <50 | <0.3 | <0.5 | <0.5 | 3.4 | NA |
| | 08/05/99 | <50 | NA | <50 | <0.3 | <0.5 | <0.5 | 3 | NA |
| | 12/28/99 | <50 | NA | <50 | <0.3 | <0.5 | <0.5 | 1 | <1.0 |
| | 03/23/00 | <50 | <50 | <50 | <0.3 | <0.5 | <0.5 | 1.5 | <1.0 |
| | 06/20/00 | <50 | <50 | <50 | <0.3 | <0.5 | <0.5 | <1.0 | <1.0 |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 1.5 | <1.0 |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 1.1 | <1.0 |
| | 04/10/01 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 07/10/01 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 10/10/01 | NA | NA | NA | NA | NA | NA | <1.0 | NA |
| | 02/14/02 | NA | NA | NA | NA | NA | NA | <1.0 | NA |
| | 04/05/02 | NA | NA | NA | NA | NA | NA | 0.59 | <1.0 |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | <0.5 | <1.0 |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | <0.5 | <1.0 |
| | 02/14/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 |

Note: * Analysis for MTBE by EPA Method 8020; Analysis for 5 oxy's (including MTBE) by EPA Method 8260B; <25 µg/L For TBA.

## Table 7: Groundwater Analytical Results - Monitoring Wells
## 246 Ghilotti Avenue, Santa Rosa

| ID | Date Sampled | TPH-g | TPH-d | B | T | E | X | MTBE* | OTHER OXY'S |
|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | | | | | | | |
| MW-1 | 06/24/96 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | NA | NA |
| | 12/20/96 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 140 | NA |
| | 04/18/97 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 130 | NA |
| | 09/11/97 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 110 | NA |
| | 06/19/98 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 96 | <1.0 |
| | 03/03/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 800 | NA |
| | 03/24/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 360 | NA |
| | 03/26/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 250 | NA |
| | 06/02/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 230 | NA |
| | 12/28/99 | <50 | NA | <0.3 | 0.66 | <0.5 | <0.5 | 230 | <1.0 |
| | 03/23/00 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 250 | <1.0 |
| | 06/20/00 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 150 | <1.0 |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 130 | <1.0 |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 210 | <1.0 |
| | 04/10/01 | NA | NA | NA | NA | NA | NA | 150 | NA |
| | 07/10/01 | NA | NA | NA | NA | NA | NA | 310 | NA |
| | 10/10/01 | NA | NA | NA | NA | NA | NA | 140 | NA |
| | 01/09/02 | NA | NA | NA | NA | NA | NA | 180 | NA |
| | 04/05/02 | NA | NA | NA | NA | NA | NA | 140 | <1.0 |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | 94 | <1.0 |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | 75 | <1.0 |
| | 01/24/03 | NA | NA | NA | NA | NA | NA | 71 | <1.0 |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | 61 | <1.0 |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | 63 | <1.0 |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | 31 | <1.0 |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | 20 | <1.0 |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | 33 | <1.0 |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | 27 | <1.0 |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | 22 | NA |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | 44 | <1.0 |

## Table 7: Groundwater Analytical Results - Monitoring Wells
## 246 Ghilotti Avenue, Santa Rosa

| ID | Date Sampled | TPH-g | TPH-d | B | T | E | X | MTBE* | OTHER OXY'S |
|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | | | | | | | |
| MW-2 | 06/24/96 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | NA | NA |
| | 12/20/96 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 37 | NA |
| | 04/18/97 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 54 | NA |
| | 09/11/97 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 72 | NA |
| | 06/19/98 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 15 | <1.0 |
| | 03/03/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 42 | NA |
| | 06/02/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 43 | NA |
| | 12/28/99 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 45 | <1.0 |
| | 03/23/00 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 72 | <1.0 |
| | 06/20/00 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 76 | <1.0 |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 52 | <1.0 |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 93 | <1.0 |
| | 04/10/01 | NA | NA | NA | NA | NA | NA | 120 | NA |
| | 07/10/01 | NA | NA | NA | NA | NA | NA | 140 | NA |
| | 10/10/01 | NA | NA | NA | NA | NA | NA | 130 | NA |
| | 01/09/02 | NA | NA | NA | NA | NA | NA | 86 | NA |
| | 04/05/02 | NA | NA | NA | NA | NA | NA | 80 | <1.0 |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | 120 | <1.0 |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | 100 | <1.0 |
| | 01/24/03 | NA | NA | NA | NA | NA | NA | 80 | <1.0 |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | 82 | <1.0 |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | 140 | <1.0 |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | 51 | <1.0 |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | 54 | <1.0 |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | 30 | <1.0 |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | 27 | <1.0 |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | 26 | <1.0 |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | 28 | <1.0 |

## Table 7: Groundwater Analytical Results - Monitoring Wells
## 246 Ghilotti Avenue, Santa Rosa

| ID | Date Sampled | TPH-g | TPH-d | B | T | E | X | MTBE* | OTHER OXY'S |
|---|---|---|---|---|---|---|---|---|---|
| | | µg/L | | | | | | | |
| MW-3 | 06/24/96 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | NA | NA |
| | 12/20/96 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 32 | NA |
| | 04/18/97 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 31 | NA |
| | 09/11/97 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 39 | NA |
| | 06/19/98 | <50 | NA | <0.3 | <0.3 | <0.5 | <0.5 | 53 | <1.0 |
| | 03/03/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 20 | NA |
| | 06/02/99 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 16 | NA |
| | 12/28/99 | <50 | NA | <0.3 | 0.45 | <0.5 | <0.5 | 35 | <1.0 |
| | 03/23/00 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 14 | <1.0 |
| | 06/20/00 | <50 | <50 | <0.3 | <0.3 | <0.5 | <0.5 | 12 | <1.0 |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 9.8 | <1.0 |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 63 | <1.0 |
| | 04/10/01 | NA | NA | NA | NA | NA | NA | 47 | NA |
| | 07/10/01 | NA | NA | NA | NA | NA | NA | 76 | NA |
| | 10/10/01 | NA | NA | NA | NA | NA | NA | 67 | NA |
| | 01/09/02 | NA | NA | NA | NA | NA | NA | 38 | NA |
| | 04/05/02 | NA | NA | NA | NA | NA | NA | 44 | <1.0 |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | 55 | <1.0 |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | 79 | <1.0 |
| | 01/24/03 | NA | NA | NA | NA | NA | NA | 40 | <1.0 |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | 65 | <1.0 |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | 98 | <1.0 |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | 76 | <1.0 |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | 46 | <1.0 |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | 49 | <1.0 |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | 74 | <1.0 |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | 90 | <1.0 |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | 54 | <1.0 |
| MW-04 | 02/11/05 | <50 | NA | <1.0 | <1.0 | <1.0 | 1.1 | 1.9 | <1.0 |
| MW-05 | 02/11/05 | <50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| MW-06 | 02/11/05 | <50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| MW-07 | 02/11/05 | <50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | 6.9 | <1.0 |
| MW-08 | 02/11/05 | <50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| MW-09 | 02/11/05 | <50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | 3.2 | <1.0 |
| MW-10 | 02/11/05 | <50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | 20 | <1.0 |

Note: *Analysis for MTBE by EPA Method 8020; Analysis for 5 oxy's (including MTBE) by EPA Method 8260B; <25 µg/L For TBA.

## Table 8: CPT Groundwater Analytical Results
## 246 Ghilotti Avenue, Santa Rosa

| Sample ID | Date | TPH-g | TPH-d | MTBE | B | T | E | X | OTHER OXY'S* |
|---|---|---|---|---|---|---|---|---|---|
| | | ug/L | | | | | | | |
| CPT-01@38.0' | 03/02/05 | <50 | <50 | 2.8* | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| CPT-01@82.0' | 03/02/05 | <50 | <50 | <1.0* | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |

Note: * Analysis for MTBE by EPA Method 8020; Analysis for 5 oxy's (including MTBE) by EPA Method 8260B; <25 µg/L For TBA.

# APPENDIX A

**UNIFIED SOIL CLASSIFICATION LEGEND**
**BORINGS LOGS LEGEND**
**DWR 188 FORMS**

| GENERAL SOIL CATEGORIES | | | SYMBOLS GRAPHIC | SYMBOLS LETTER | TYPICAL SOIL TYPES |
|---|---|---|---|---|---|
| COARSE GRAINED SOILS More than half is larger than no. 200 sieve | **Gravel** More than half of coarse fraction is larger than No. 4 sieve size | Clean Gravel with little or no fines | | GW | Well Graded Gravels, Gravel - Sand mixtures |
| | | | | GP | Poorly Graded Gravels, Gravel - Sand mixtures |
| | | Gravel with more than 12% fines | | GM | Silty Gravels, Poorly Graded; Gravel - Sand - Silt Mixtures |
| | | | | GC | Clayey Gravels, Poorly Graded; Gravel - Sand - Clay Mixtures |
| | **Sand** More than half of coarse fraction is smaller than No. 4 sieve size | Clean Sand with little or no fines | | SW | Well Graded Sands, Gravelly Sands |
| | | | | SP | Poorly Graded Sands, Gravelly Sands |
| | | Sand with more than 12% fines | | SM | Silty Sands, Poorly Graded; Sand - Silt Mixtures |
| | | | | SC | Clayey Sands, Poorly Graded; Sand - Clay Mixtures |
| FINE GRAINED SOILS More than half is smaller than no. 200 sieve | **Silt and Clay** Liquid Limit Less than 50% | | | ML | Inorganic Silts and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity |
| | | | | CL | Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays |
| | | | | OL | Organic Silts and Organic Silty Clays of Low Plasticity |
| | **Silt and Clay** Liquid Limit Greater than 50% | | | MH | Inorganic Silts, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silts |
| | | | | CH | Inorganic Clays of High Plasticity, Fat Clays |
| | | | | OH | Organic Clays of Medium to High Plasticity |
| **Highly Organic Soils** | | | | PT | Peat and Other Highly Organic Soils |
| **Bedrock** | | | | BR | Bedrock |
| **Aggregate Base** | | | | B | Mixed Fill |
| **Asphalt** | | | | A | Asphalt |
| **Concrete** | | | | C | Concrete |

■ Soil sample submitted for chemical analysis

☒ Soil sample examined for soil classification

Sampler Type
CMSS = CA Modified Split Spoon
SPT = Standard Penetration Test
CBS = Continuous Barrel Sampler
GRAB = Grab Sample
HA = Hand Auger

▼ Initial Static Water Level

▽ First Identified Free Water

n.a. = not applicable
n.r. = not recorded

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**UNIFIED SOIL CLASSIFICATION SYSTEM CHART and BORING LOG LEGEND**

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
A-1
1 of 1

Date (start, end): 2/1/05 - 2/1/05
Drilling Time (start, end) 08:10 - 10:30
Logged By: Stephen Knüttel
Checked By:

Boring No.
**MW-04**

Boring Location: See site plan

See Unified Soil Classification System (USCS) for Legend and information not noted.

Drilling Contractor: Clear Heart Drilling, Inc.
Driller's Name: Rick Schnieder
Drilling Method: 8-in Hollow-Stem Auger
Sampling Method: CMSS
Hammer weight / fall: 140 lbs / 30 inch
Notes:

MW Installed: Y ☒ N ☐ if no, boring backfilled with:
Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐
Auger Depth, ft: 20.5 Total Depth, ft: 21.5

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 98.8 | | | | | | | |
| | | | | | | | | 98.5 | | | | | | | **ASPHALT**: over base rock. |
| | | | | | | | | 97.8 | 1 | | | | | | **SANDY CLAY** (CL): dark gray, very fine to fine grained sand, trace fine gravel, moist. |
| | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | 3 | | | | | | |
| | | | | | | | | | 4 | | | | | | Moderate to light brown. |
| X | 6 | 5 | CMSS | | 0 | | | | 5 | | | 30 | 30 | 40 | |
| ■ | 6 | 9 | | | | No | No | | | | T | 30 | 30 | 40 | |
| X | 6 | 13 | | | | | | 92.8 | 6 | | 20 | 30 | 20 | 30 | **SANDY CLAY with Gravel** (CL): brown, very fine to medium grained sand, fine gravel, rounded, moist to wet. |
| | | | | | | | | | 7 | | | | | | |
| | | | | | | | | | 8 | | | | | | |
| | | | | | | | | 89.8 | 9 | | | | | | **CLAY with Sand** (CL): brown, very fine to fine grained sand, moist to wet. |
| X | 6 | 3 | CMSS | ▽ | 0 | | | | 10 | | | 15 | 35 | 50 | |
| ■ | 6 | 4 | | | | | | | | | | 15 | 35 | 50 | |
| X | 6 | 6 | | | | | | | 11 | | | 15 | 35 | 50 | |

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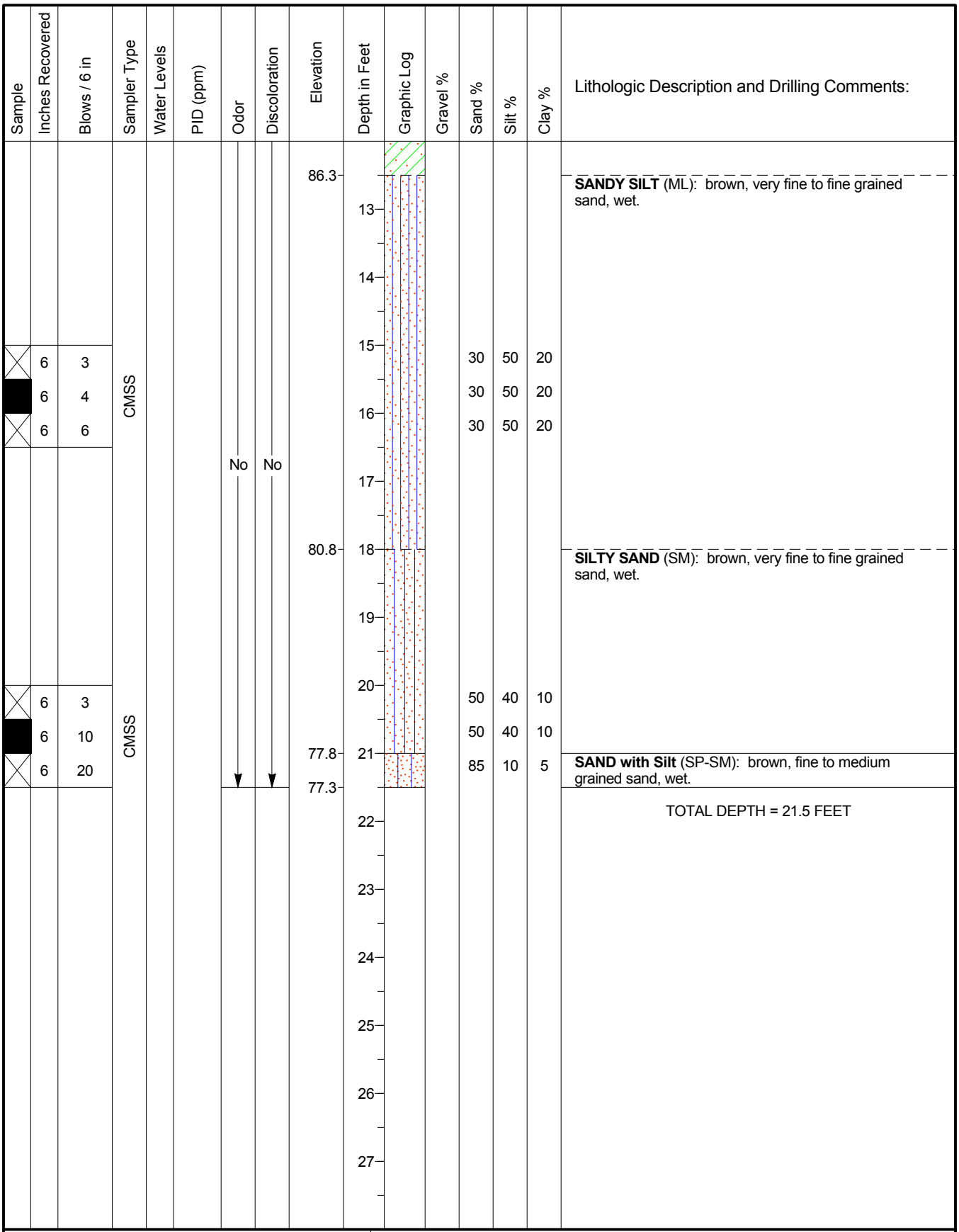
# BORING LOG MW-04

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-04

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# BORING LOG MW-04

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-04
2 of 2

Date (start, end): 2/1/05 - 2/1/05
Drilling Time (start, end) 10:45 - 13:30
Logged By: Stephen Knüttel
Checked By:

Boring No.
**MW-05**

Boring Location: See site plan

See Unified Soil Classification System (USCS) for Legend and information not noted.

Drilling Contractor: Clear Heart Drilling, Inc.
Driller's Name: Rick Schnieder
Drilling Method: 8-in Hollow-Stem Auger
Sampling Method: CMSS
Hammer weight / fall: 140 lbs / 30 inch
Notes:

MW Installed: Y ☒ N ☐ if no, boring backfilled with:
Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐
Auger Depth, ft: 20.5 Total Depth, ft: 21.5

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 100.8 | | | | | | | **GRAVEL BASE** |
| | | | | | | | | 99.8 | 1 | | | | | | **SANDY CLAY** (CL): dark gray, very fine to fine grained sand, trace fine gravel, moist. |
| | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | 3 | | | | | | |
| | | | | | | | | | 4 | | | | | | |
| | | | | | | | | | 5 | | | | | | |
| X | 6 | 3 | CMSS | | 0 | | | 95.6 | | | T | 10 | 30 | 60 | **CLAY** (CL): brown, silty, moist. |
| ■ | 6 | 8 | | | | No | No | | 6 | | | | 30 | 70 | |
| X | 6 | 12 | | | | | | 94.5 | | | | 20 | 60 | 20 | **SILT with Sand** (ML): light brown, very fine to fine grained sand, minor clay, moist. |
| | | | | | | | | | 7 | | | | | | |
| | | | | | | | | | 8 | | | | | | |
| | | | | | | | | | 9 | | | | | | |
| | | | | | | | | | 10 | | | | | | |
| X | 6 | 6 | CMSS | ▽ | 0 | | | | | | 5 | 20 | 60 | 15 | With minor gravel. |
| X | 6 | 24 | | | | | | | | | 15 | 20 | 50 | 15 | |
| ■ | 6 | 24 | | | | | | 89.8 | 11 | | 50 | 20 | 20 | 10 | **GRAVEL with Silt and Sand** (GP-GM): brown, fine gravel, fine to coarse grained sand, moist to wet. |


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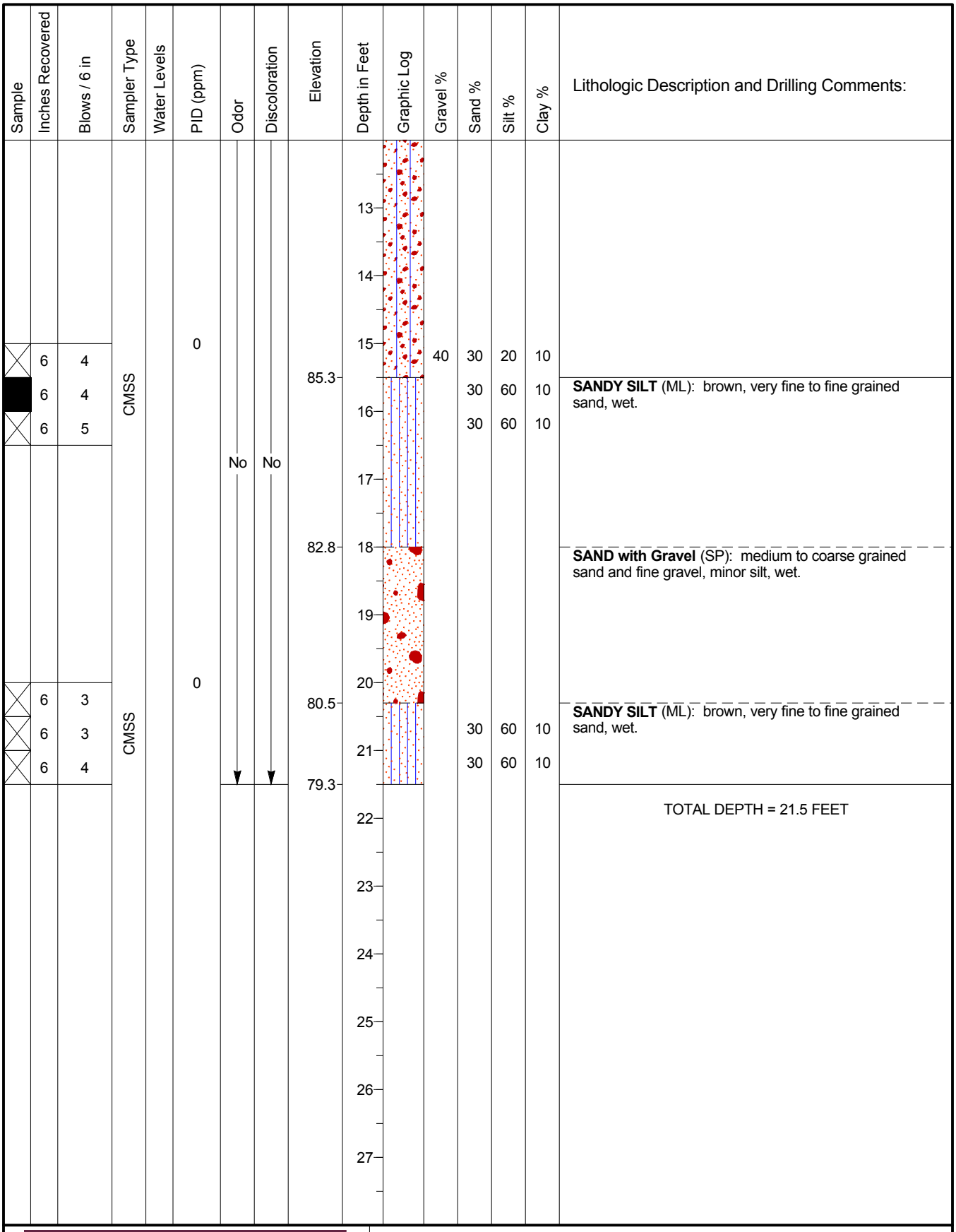
# BORING LOG MW-05

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-05
1 of 2




SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05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# BORING LOG MW-05

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-05
2 of 2

Date (start, end): 2/1/05 - 2/1/05
Drilling Time (start, end) 13:45 - 16:15
Logged By: Stephen Knüttel
Checked By:

Boring No.
**MW-06**

Boring Location: See site plan

See Unified Soil Classification System (USCS) for Legend and information not noted.

Drilling Contractor: Clear Heart Drilling, Inc.
Driller's Name: Rick Schnieder
Drilling Method: 8-in Hollow-Stem Auger
Sampling Method: CMSS
Hammer weight / fall: 140 lbs / 30 inch
Notes:

MW Installed: Y ☒ N ☐ if no, boring backfilled with:
Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐
Auger Depth, ft: 20.5 Total Depth, ft: 21.5

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 101.4 | | | | | | | **GRAVEL BASE** |
| | | | | | | | | 100.4 | 1 | | | | | | **SANDY CLAY**: dark gray, very fine to fine grained sand, trace fine gravel, moist. |
| | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | 3 | | | | | | |
| | | | | | | | | | 4 | | | | | | |
| X | 6 | 3 | CMSS | | 0 | | | | 5 | | T | 30 | 30 | 40 | |
| ■ | 6 | 3 | | | | No | No | | 6 | | 20 | 20 | 20 | 40 | ~0.2' thick gravelly clay layer. |
| X | 6 | 4 | | | | | | | | | T | 40 | 20 | 40 | |
| | | | | | | | | | 7 | | | | | | |
| | | | | | | | | | 8 | | | | | | |
| | | | | ▽ | | | | 92.4 | 9 | | | | | | **GRAVEL with Silt and Sand** (GP-GM): brown, fine and coarse gravel and fine to coarse grained sand, wet. |
| X | 1 | 8 | CMSS | | 0 | | | | 10 | | 40 | 25 | 25 | 10 | |
| ■ | 6 | 9 | | | | | | | | | 40 | 25 | 25 | 10 | |
| X | 6 | 12 | | | | | | | 11 | | 40 | 25 | 25 | 10 | |

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# BORING LOG MW-06

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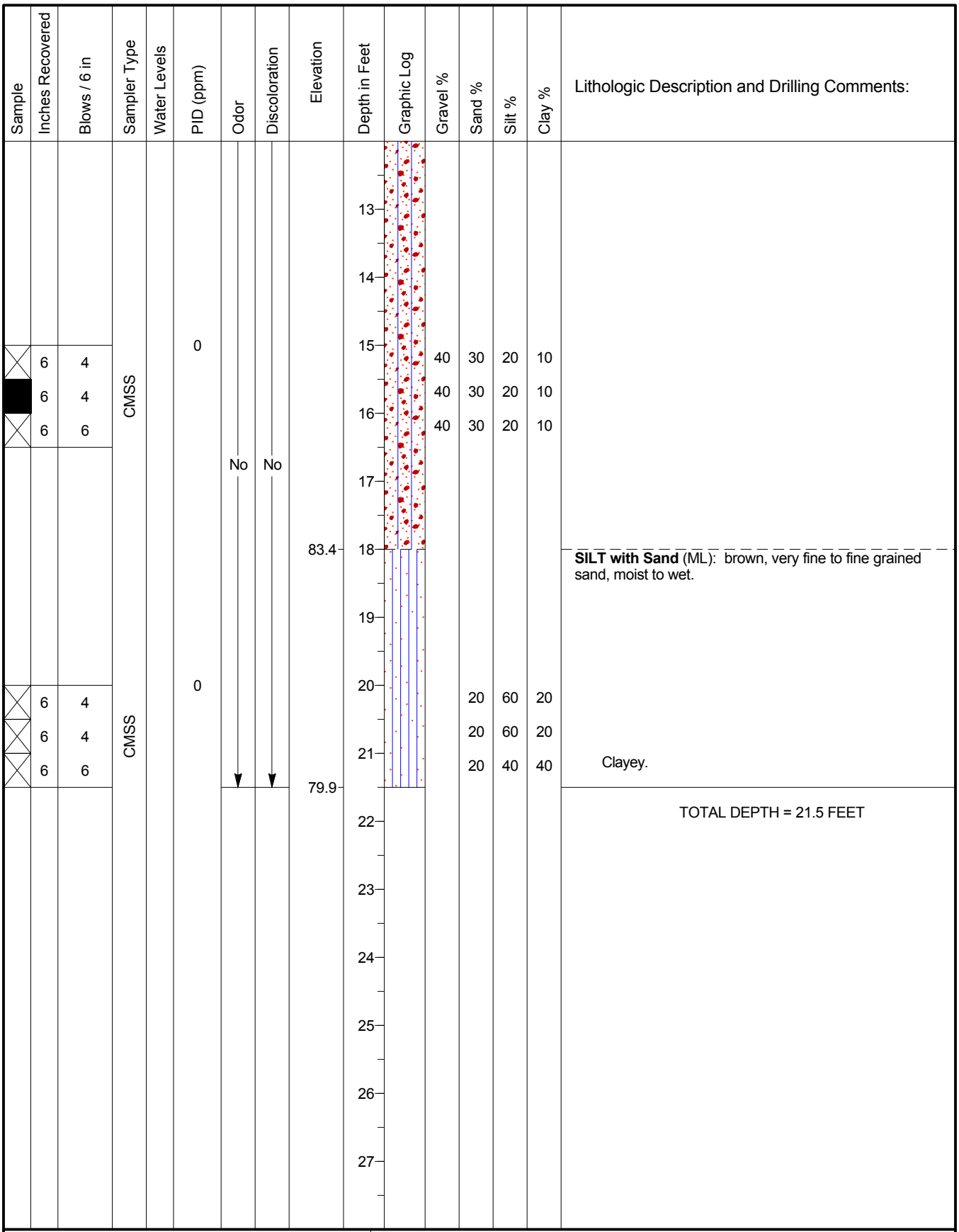
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-06

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# BORING LOG MW-06

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-06
2 of 2

Date (start, end): 2/2/05 - 2/2/05
Drilling Time (start, end) 08:30 - 11:00
Logged By: Stephen Knüttel
Checked By:

Boring No.
**MW-07**

Boring Location: See site plan

See Unified Soil Classification System (USCS) for Legend and information not noted.

Drilling Contractor: Clear Heart Drilling, Inc.
Driller's Name: Rick Schnieder
Drilling Method: 8-in Hollow-Stem Auger
Sampling Method: CMSS
Hammer weight / fall: 140 lbs / 30 inch
Notes:

MW Installed: Y ☒ N ☐ if no, boring backfilled with:
Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐
Auger Depth, ft: 20.5 Total Depth, ft: 21.5

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 100.6 | | | | | | | |
| | | | | | | | | 100.4 | | | | | | | **ASPHALT**: over base rock. |
| | | | | | | | | 99.6 | 1 | | | | | | **SANDY SILT with Gravel** (ML): dark gray, moist, (Fill). |
| | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | 3 | | | | | | |
| | | | | | | | | 96.6 | 4 | | | | | | **SANDY CLAY** (CL): dark brown, very fine to fine grained sand, minor fine gravel, moist. |
| | | | | | | | | | 5 | | | | | | |
| ☒ | 0 | 3 | CMSS | | 0 | | | | | | | | | | |
| ☒ | 0 | 4 | | | | No | No | | 6 | | 5 | 30 | 30 | 35 | |
| ■ | 5 | 7 | | | | | | | | | | | | | |
| | | | | | | | | | 7 | | | | | | |
| | | | | | | | | 92.6 | 8 | | | | | | **SILTY GRAVEL** (GM): brown to gray, fine and coarse gravel and fine to coarse grained sand, moist to wet. |
| | | | | | | | | | 9 | | | | | | |
| ☒ | 6 | 17 | CMSS | ▽ | 0 | | | | 10 | | 40 | 30 | 25 | 5 | |
| ☒ | 6 | 11 | | | | | | | | | 40 | 25 | 30 | 5 | |
| ■ | 6 | 13 | | | | | | 89.4 | 11 | | | | | | **CLAY** (CL): brown, moist. |

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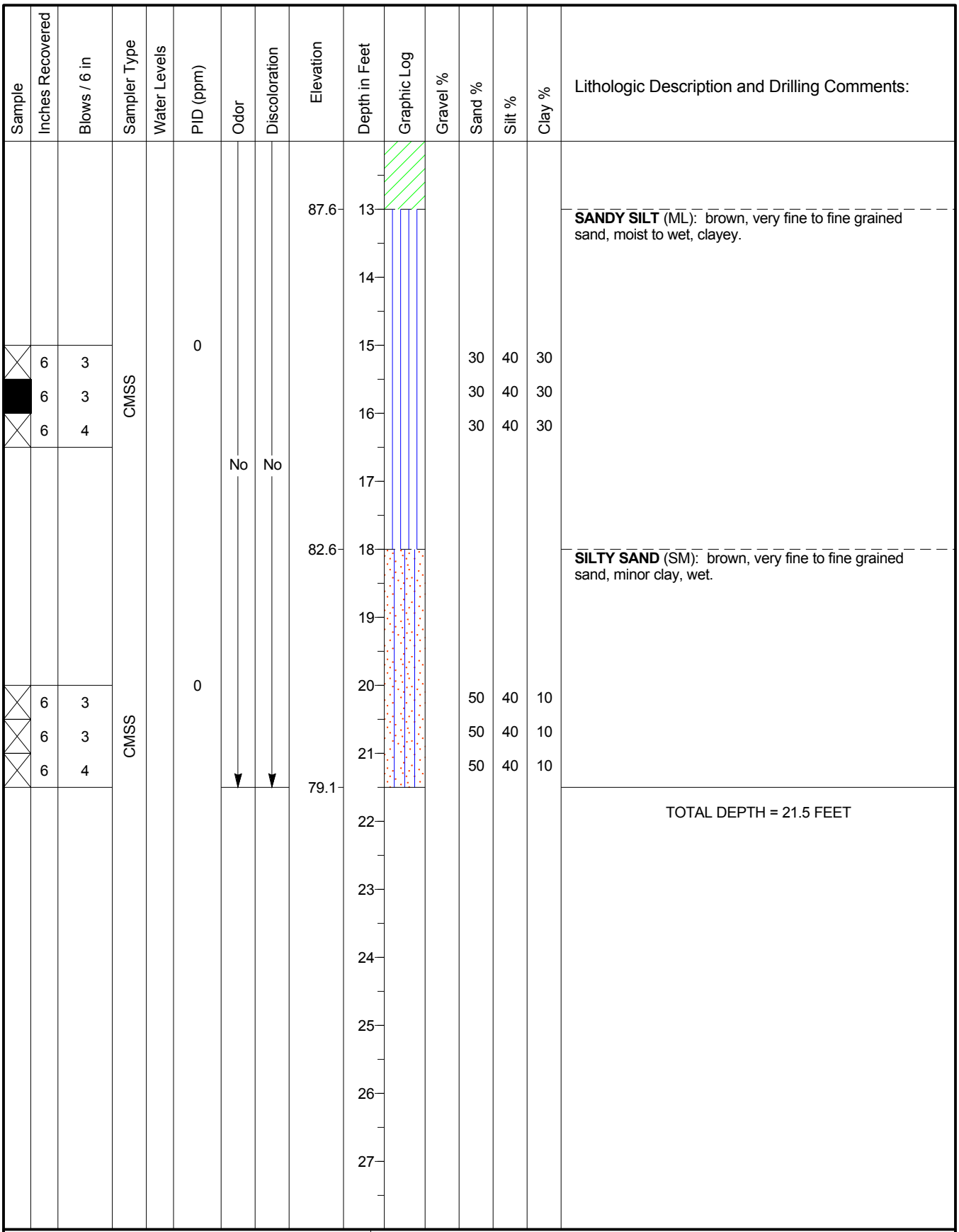
# BORING LOG MW-07

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-07




SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05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# BORING LOG MW-07

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-07

Date (start, end): 2/2/05 - 2/2/05
Drilling Time (start, end) 12:00 - 15:00
Logged By: Stephen Knüttel
Checked By:

Boring No.
**MW-08**

Boring Location: Ghilotti Avenue

See Unified Soil Classification System (USCS) for Legend and information not noted.

Drilling Contractor: Clear Heart Drilling, Inc.
Driller's Name: Rick Schnieder
Drilling Method: 8-in Hollow-Stem Auger
Sampling Method: CMSS
Hammer weight / fall: 140 lbs / 30 inch
Notes:

MW Installed: Y ☒ N ☐ if no, boring backfilled with:
Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐
Auger Depth, ft: 20.5 Total Depth, ft: 21.5

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 98.7 | | | | | | | |
| | | | | | | | | 98.5 | | | | | | | **ASPHALT**: over base rock. |
| | | | | | | | | 97.7 | 1 | | | | | | **SANDY CLAY** (CL): brown, fine to medium grained sand, moist. |
| | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | 3 | | | | | | |
| | | | | | | | | | 4 | | | | | | |
| X | 6 | 5 | CMSS | | 0 | | | | 5 | | | 30 | 20 | 50 | |
| ■ | 6 | 9 | | | | | | | | | | 30 | 30 | 40 | |
| X | 6 | 11 | | | | No | No | 92.7 | 6 | | | 30 | 40 | 30 | **SANDY SILT** (ML): brown, very fine to fine grained sand, moist, clayey. |
| | | | | | | | | | 7 | | | | | | |
| | | | | | | | | | 8 | | | | | | |
| | | | | | | | | 90.2 | | | | | | | **SANDY CLAY** (CL): brown, very fine to fine grained sand, moist. |
| | | | | | | | | | 9 | | | | | | |
| X | 6 | 5 | CMSS | ▽ | 0 | | | | 10 | | | 30 | 30 | 40 | |
| ■ | 6 | 5 | | | | | | | | | | 30 | 30 | 40 | Wet. |
| X | 6 | 6 | | | | | | 87.7 | 11 | | | 30 | 40 | 30 | **SANDY SILT** (ML): brown, very fine to fine grained sand, wet, clayey. |

SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05


SCS ENGINEERS
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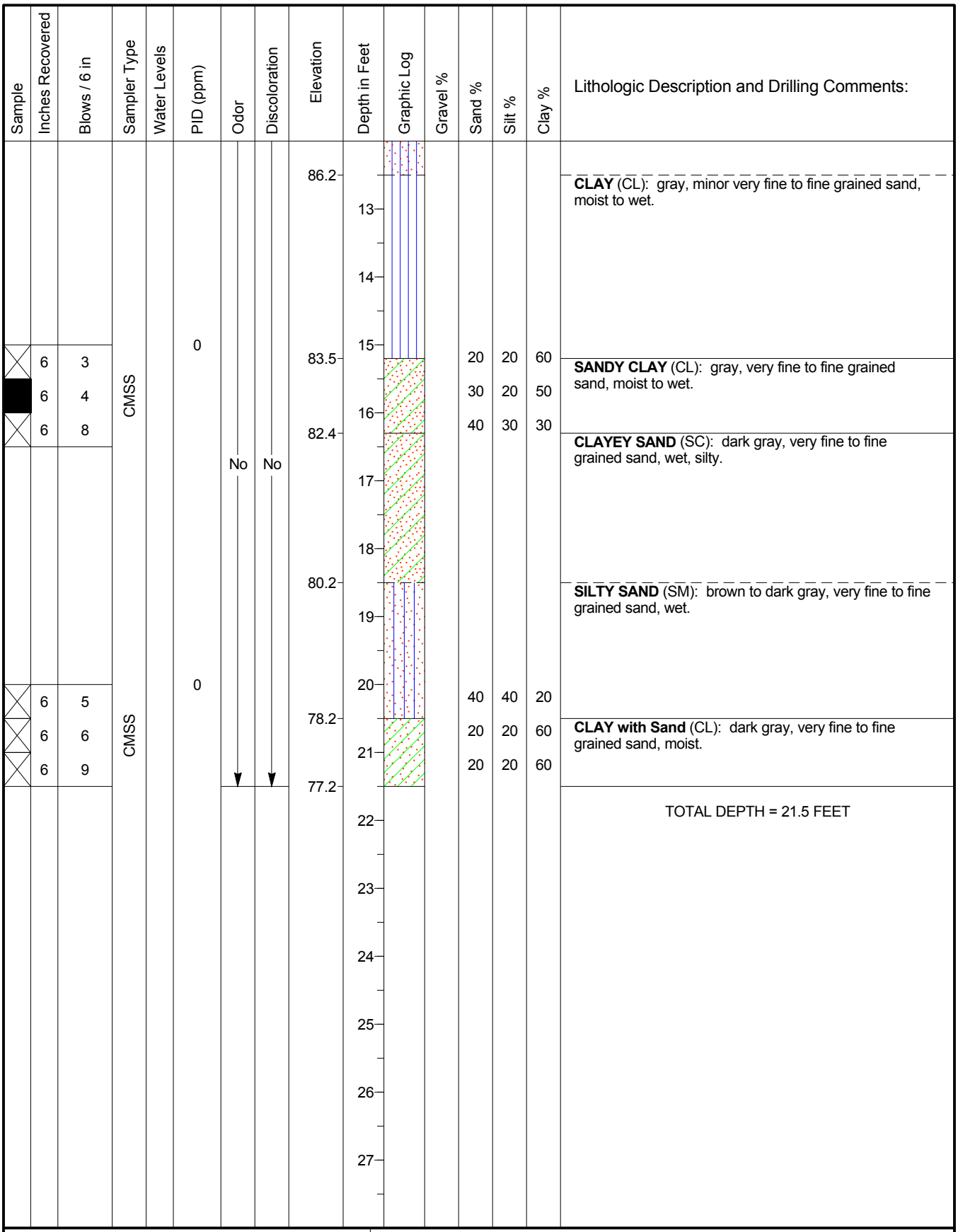
3645 Westwind Bouevard
Santa Rosa, California 95403
Ph.: 707-546-9461 Fax: 707-544-5769


# BORING LOG MW-08

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-08




SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05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# BORING LOG MW-08

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-08

Date (start, end): 2/3/05 - 2/3/05
Drilling Time (start, end) 12:30 - 15:00
Logged By: Stephen Knüttel
Checked By:

Boring No.
**MW-09**

Boring Location: Ghilotti Avenue

See Unified Soil Classification System (USCS) for Legend and information not noted.

Drilling Contractor: Clear Heart Drilling, Inc.
Driller's Name: Rick Schnieder
Drilling Method: 8-in Hollow-Stem Auger
Sampling Method: CMSS
Hammer weight / fall: 140 lbs / 30 inch
Notes:

MW Installed: Y ☒ N ☐ if no, boring backfilled with:
Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐
Auger Depth, ft: 20.5 Total Depth, ft: 21.5

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 98.7 | | | | | | | |
| | | | | | | | | 98.5 | | | | | | | **ASPHALT**: over base rock. |
| | | | | | | | | 97.7 | 1 | | | | | | **SANDY CLAY** (CL): brown, very fine to fine grained sand, moist. |
| | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | 3 | | | | | | |
| | | | | | | | | 94.7 | 4 | | | | | | |
| X | 6 | 9 | CMSS | | 0 | | | | 5 | | 40 | 30 | 20 | 10 | **GRAVEL with Silt and Sand** (GW-GM): brown tp yellowish brown, fine and coarse gravel, fine to coarse grained sand, moist. |
| ■ | 6 | 18 | | | | No | No | | | | 40 | 30 | 20 | 10 | |
| X | 6 | 28 | | | | | | | 6 | | 40 | 30 | 20 | 10 | |
| | | | | | | | | | 7 | | | | | | |
| | | | | | | | | | 8 | | | | | | |
| | | | | | | | | 90.2 | | | | | | | **SAND with Gravel** (SW): brown, fine to coarse grained sand and fine and coarse gravel, minor silt, wet. |
| | | | | | | | | | 9 | | | | | | |
| X | 0 | 19 | CMSS | ▽ | 0 | | | | 10 | | | | | | Wet. |
| X | 2 | 14 | | | | | | | | | | | | | |
| ■ | 6 | 6 | | | | | | | 11 | | 30 | 50 | 15 | 5 | |

SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05


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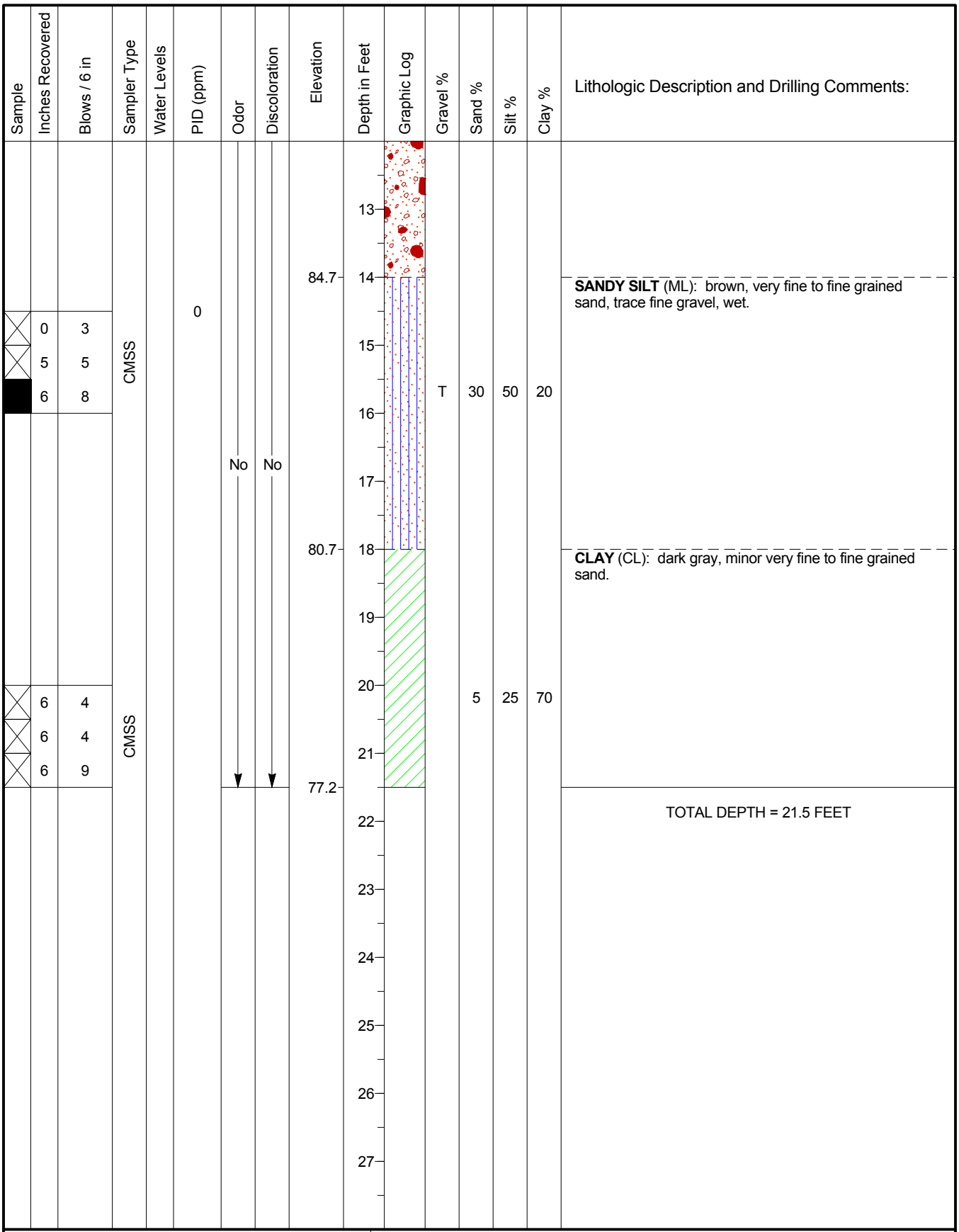
# BORING LOG MW-09

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-09




SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05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# BORING LOG MW-09

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-09

Date (start, end): 2/3/05 - 2/3/05
Drilling Time (start, end) 08:30 - 11:15
Logged By: Stephen Knüttel
Checked By:

Boring No.
**MW-10**

Boring Location: Ghilotti Avenue

See Unified Soil Classification System (USCS) for Legend and information not noted.

Drilling Contractor: Clear Heart Drilling, Inc.
Driller's Name: Rick Schnieder
Drilling Method: 8-in Hollow-Stem Auger
Sampling Method: CMSS
Hammer weight / fall: 140 lbs / 30 inch
Notes:

MW Installed: Y ☒ N ☐ if no, boring backfilled with:
Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐
Auger Depth, ft: 21.5 Total Depth, ft: 21.5

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 98.6 | | | | | | | |
| | | | | | | | | 98.4 | | | | | | | **ASPHALT**: over base rock. |
| | | | | | | | | 97.6 | 1 | | | | | | **SANDY CLAY** (CL): dark brown, very fine to fine grained sand, trace fine gravel, moist. |
| | | | | | | | | | 2 | | | | | | |
| | | | | | | | | | 3 | | | | | | |
| | | | | | | | | 94.6 | 4 | | | | | | **GRAVEL with Silt and Sand** (GW-GM): dark brown to dark gray, fine and coarse gravel, fine to coarse grained sand, moist. |
| ☒ | 0 | 15 | CMSS | | 0 | | | | 5 | | | | | | |
| ☒ | 0 | 17 | | | | No | No | | 6 | | 40 | 30 | 20 | 10 | |
| ■ | 5 | 17 | | | | | | | 7 | | | | | | |
| | | | | | | | | 90.6 | 8 | | | | | | **SANDY SILT** (ML): brown, very fine to fine grained sand, clayey. |
| ☒ | 6 | 5 | CMSS | ▽ | 0 | | | | 9 | | | 30 | 40 | 30 | |
| ■ | 6 | 5 | | | | | | | 10 | | | 30 | 40 | 30 | |
| ☒ | 6 | 5 | | | | | | | 11 | | | 30 | 40 | 30 | |

SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05


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# BORING LOG MW-10

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-10

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 13 | | | | | | |
| | | | | | | | | | 14 | | | | | | |
| | | | | | 0 | | | | | | | | | | |
| | 6 | 2 | CMSS | | | | | | 15 | | | 30 | 40 | 30 | |
| | 6 | 2 | | | | | | | | | | 30 | 40 | 30 | |
| | 6 | 3 | | | | | | | | | | 30 | 40 | 30 | |
| | | | | | | No | No | | 16 | | | | | | |
| | | | | | | | | | 17 | | | | | | |
| | | | | | | | | 80.6 | 18 | | | | | | **SANDY CLAY** (CL): dark brown, very fine to fine grained sand, wet. |
| | | | | | | | | | 19 | | | | | | |
| | | | | | 0 | | | | 20 | | | 30 | 30 | 40 | |
| | 6 | 3 | CMSS | | | | | | | | | | | | |
| | 6 | 4 | | | | | | | | | | 30 | 30 | 40 | |
| | 6 | 4 | | | | | | | 21 | | | 30 | 30 | 40 | Dark gray. |
| | | | | | | | | 77.1 | | | | | | | |
| | | | | | | | | | 22 | | | | | | TOTAL DEPTH = 21.5 FEET |
| | | | | | | | | | 23 | | | | | | |
| | | | | | | | | | 24 | | | | | | |
| | | | | | | | | | 25 | | | | | | |
| | | | | | | | | | 26 | | | | | | |
| | | | | | | | | | 27 | | | | | | |

SCS-SANTA ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA.GDT 04/19/05

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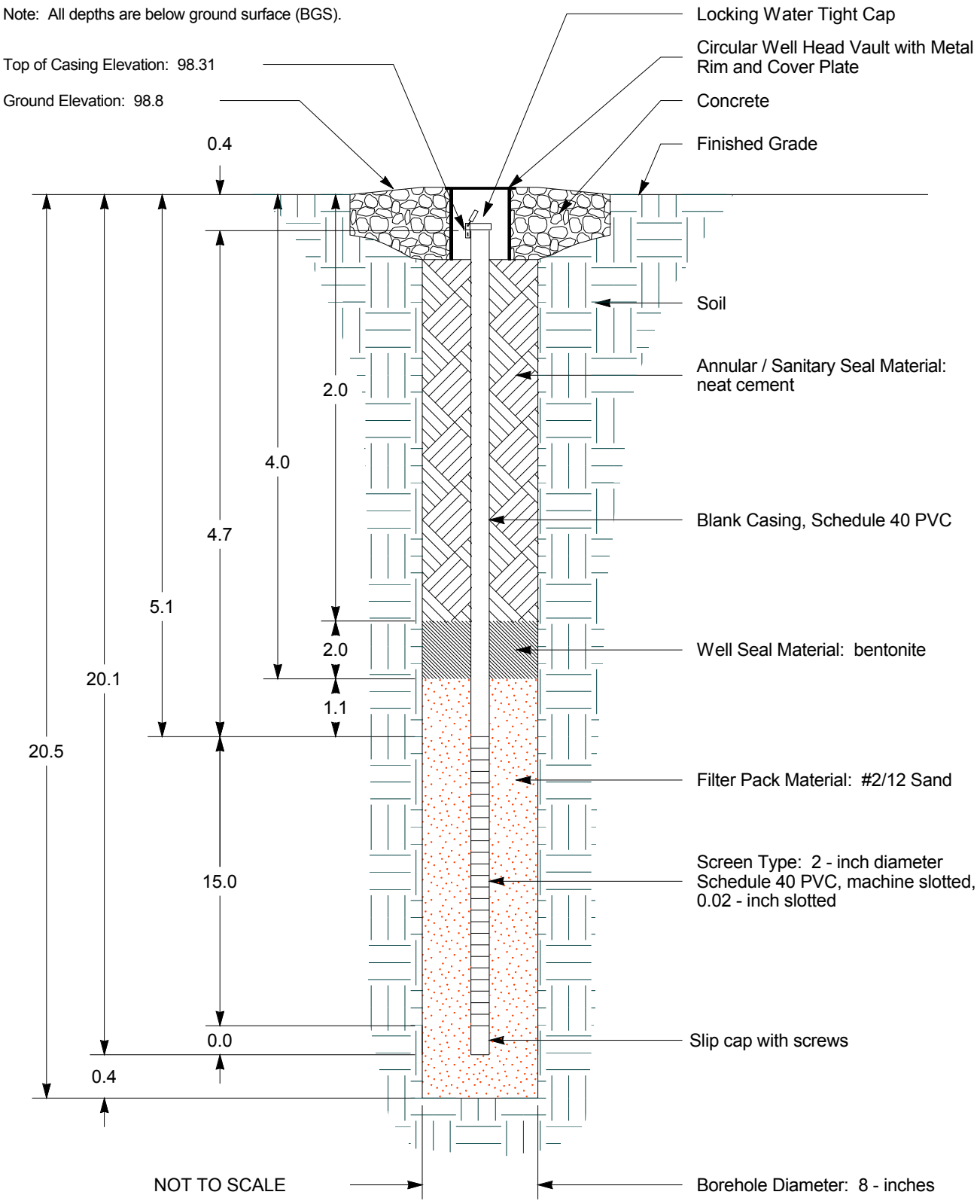
# BORING LOG MW-10

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix A
MW-10

# APPENDIX B

## WELL COMPLETION DIAGRAMS

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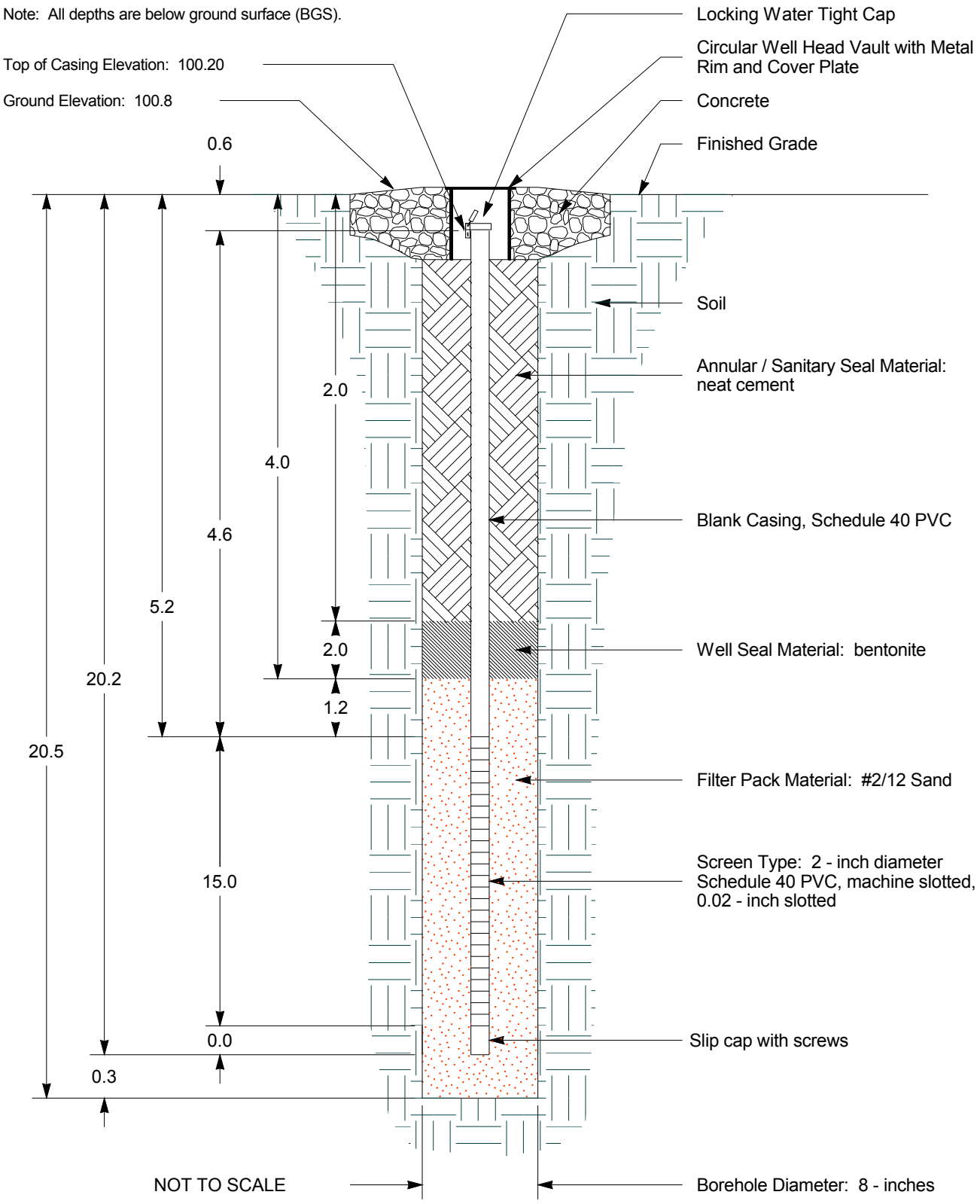
WELL COMPLETION DIAGRAM FOR MW-04

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix B
MW-04

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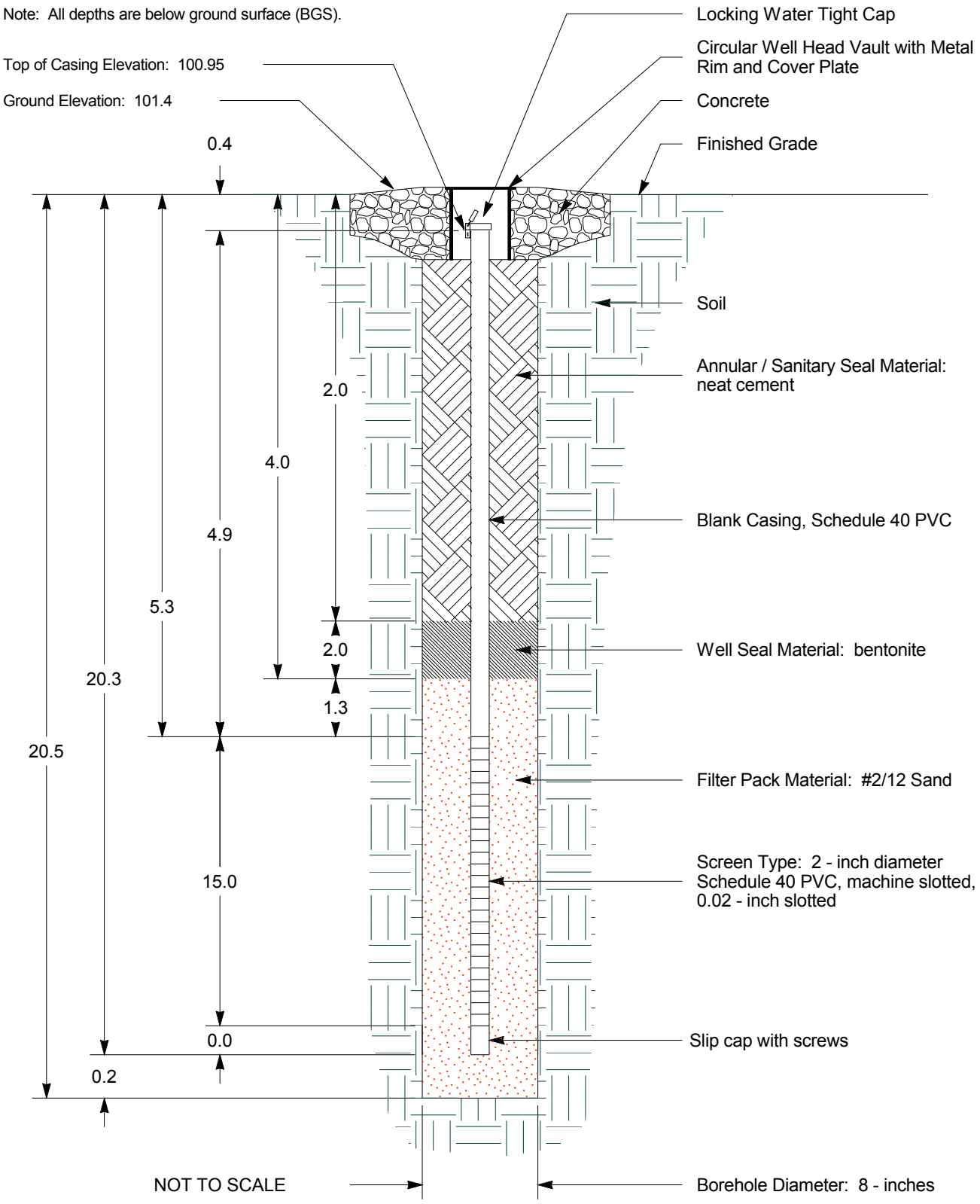
WELL COMPLETION DIAGRAM FOR MW-05

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix B
MW-05

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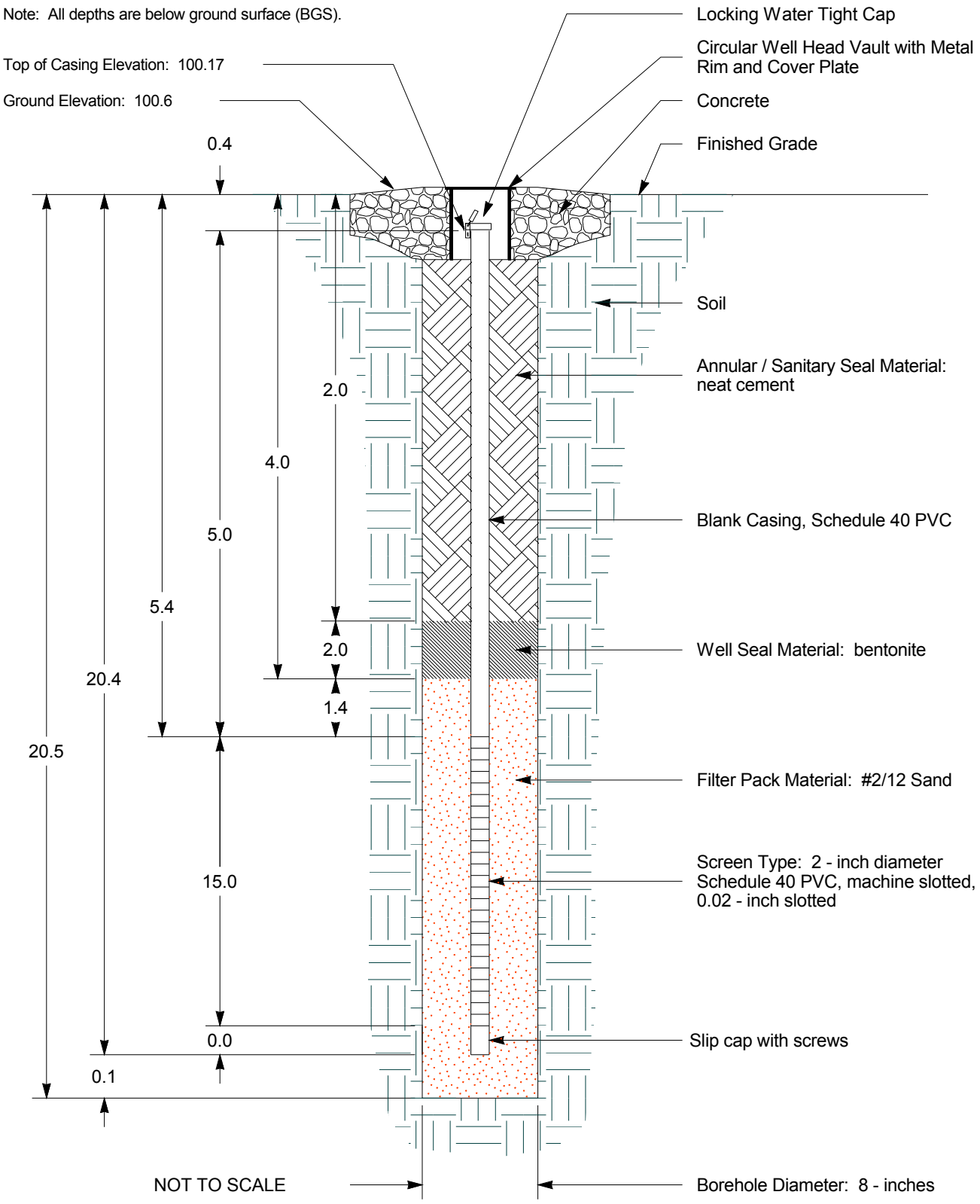
WELL COMPLETION DIAGRAM FOR MW-06

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix B
MW-06

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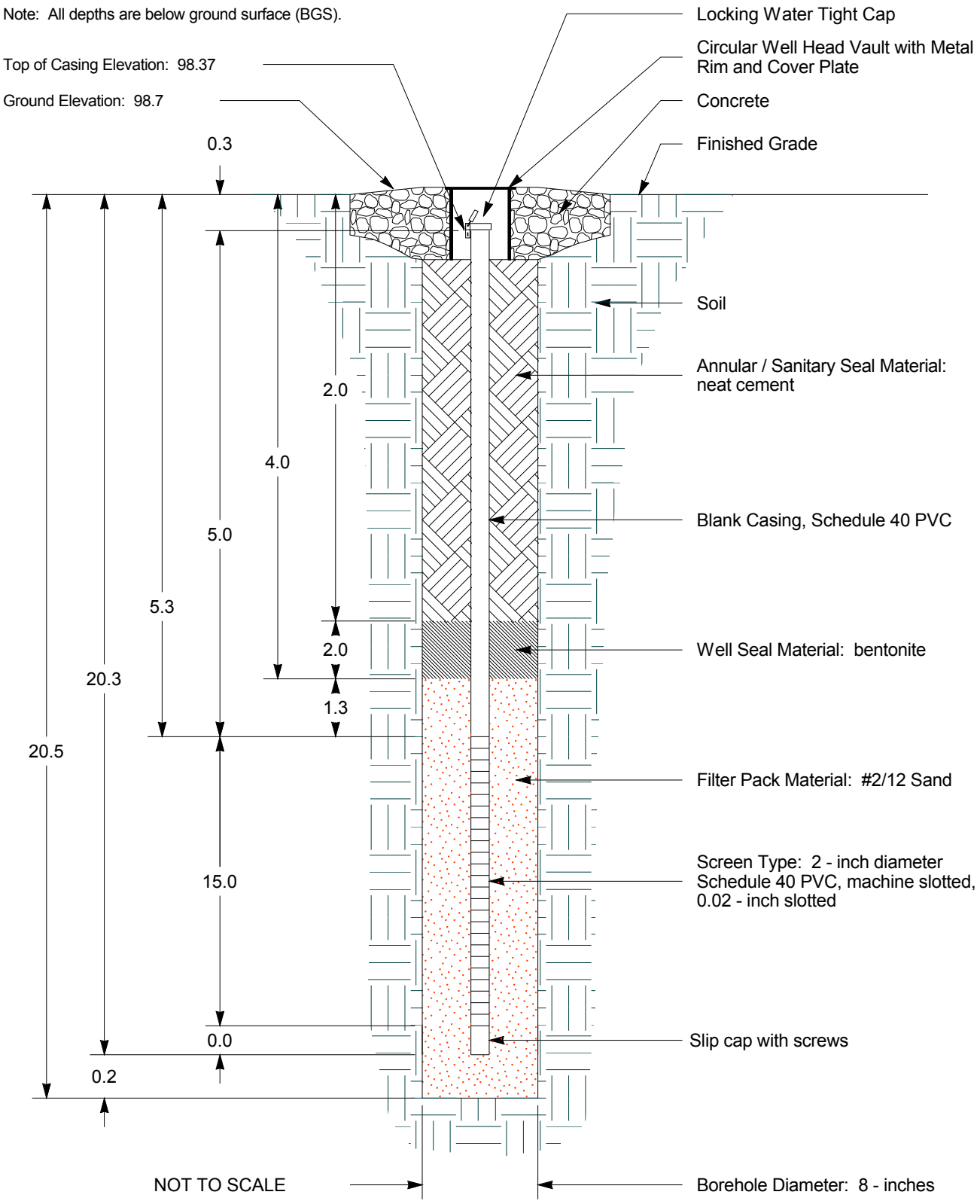
WELL COMPLETION DIAGRAM FOR MW-07

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix B
MW-07

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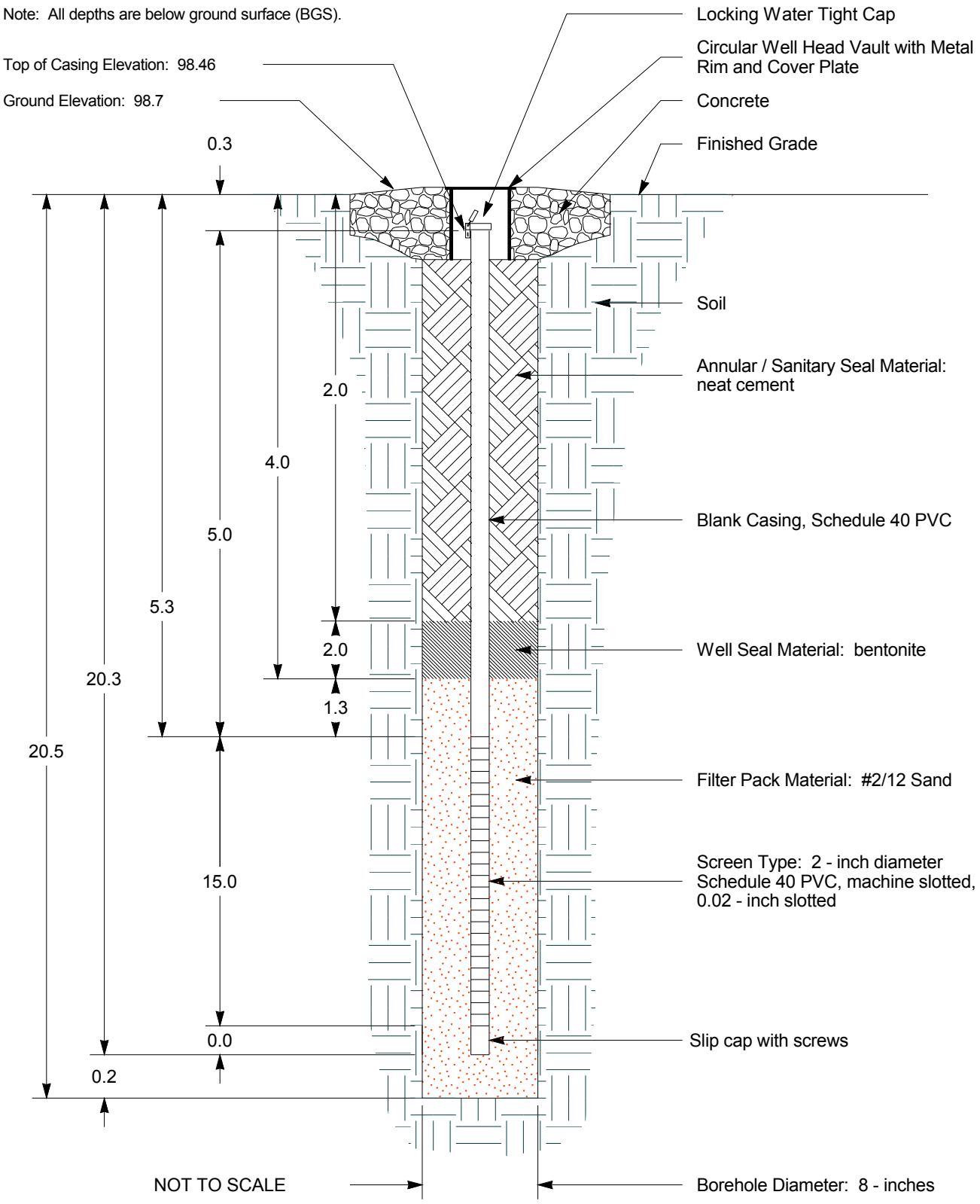
WELL COMPLETION DIAGRAM FOR MW-08

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix B
MW-08




SCS ENGINEERS

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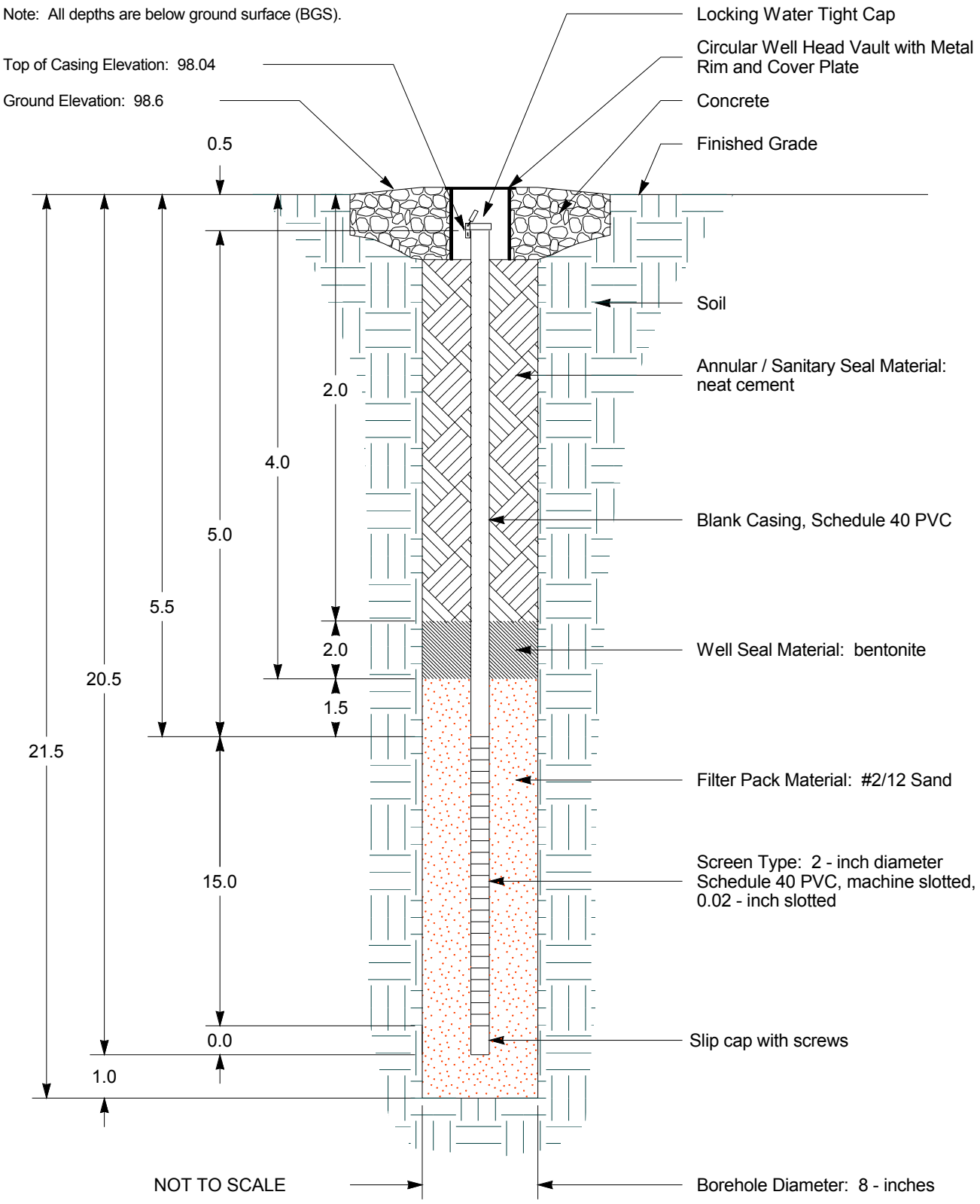
WELL COMPLETION DIAGRAM FOR MW-09

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix B
MW-09

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WELL COMPLETION DIAGRAM FOR MW-10

Ghilotti Construction Company
246 Ghilotti Avenue
Santa Rosa, California
Job Number: 01203312.00

Figure:
Appendix B
MW-10

# APPENDIX C

## WELL DEVELOPMENT RECORDS
## WELL PURGE RECORDS

**SCS ENGINEERS**

# WELL DEVELOPMENT RECORD

WELL NUMBER: **MW-04**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |
| **PROJECT LOCATION** | **AIR TEMPERATURE** | **WEATHER** | **SUBCONTRACTOR** |
| **246 Ghilotti Avenue Santa Rosa, California** | **~63 °** | **Sunny** | **None** |

METHOD

HAND PUMP (HP) _____
SUBMERSIBLE PUMP (SP) X
BAILER (B) _____
SURGE BLOCK (SB) X

DEVELOPMENT CRITERIA

**Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized.**

REMARKS

*** Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).**

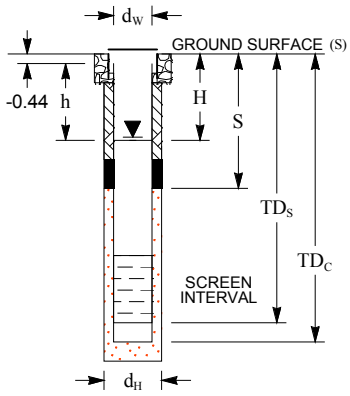
HOLE DIAMETER $d_H$ = **8.0**

WELL CASING
- INSIDE DIAM $d_WID$ = **2.0**
- OUTSIDE DIAM $d_WOD$ = **2.5**

DEPTH TO:
- WATER LEVEL h = **3.81**
- BASE OF SEAL S = **4.0**
- BASE OF SCREEN $TD_S$ = **20.1**
- BASE OF SUMP $TD_C$ = **20.1**

ESTIMATED FILTER PACK POROSITY P = **0.25**

Diameters in (inches) : Depths in (feet)




PURGE VOLUME CALCULATION

CASING VOLUME =

$$V_C = \pi \left(\frac{d_WID}{2}\right)^2 ( TD_C - H ) = 3.14 \left(\frac{0.17}{2}\right)^2 ( 20.1 - 4.3 )$$

$$= \mathbf{0.35\ ft^3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2}\right)^2 - \left(\frac{d_WOD}{2}\right)^2\right] ( TD_s - ( S \text{ or } H )^* )( P )$$

$$= \mathbf{1.25\ ft^3}$$

TOTAL WELL VOLUME =

$V_T = V_C + V_F =$ **1.59 ft³ x 7.48 gal/ft³ = 11.9 gal**

( * If S > H, use S; If S < H, use H )

| DEVELOPMENT LOG | | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/02/05 | 01:30 | 01:31 | SP | 1 | 1 | 0.08 | 7 | 2.42 | 616 | 20.9 | 7.53 | |
| 02/02/05 | 01:31 | 01:33 | SP | 2 | 3 | 0.25 | 6.85 | 1.71 | *MLE | 21.1 | 6.31 | |
| 02/02/05 | 01:33 | 01:35 | SP | 2 | 5 | 0.42 | 6.75 | 1.52 | *MLE | 21 | 4.71 | |
| 02/02/05 | 01:35 | 01:38 | SP | 3 | 8 | 0.67 | 6.78 | 1.41 | *MLE | 21.1 | 3.88 | |
| 02/02/05 | 01:40 | 01:50 | SB | 0 | 8 | 0.67 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/02/05 | 01:52 | 01:57 | SP | 5 | 13 | 1.09 | 6.78 | 2.06 | 500 | 19.5 | 4.39 | |
| 02/02/05 | 01:57 | 02:03 | SP | 5 | 18 | 1.51 | 6.73 | 1.64 | *MLE | 20.3 | 2.57 | |
| 02/02/05 | 02:03 | 02:13 | SP | 10 | 28 | 2.35 | 6.64 | 1.4 | *MLE | 20.8 | 2.28 | |
| 02/02/05 | 02:13 | 02:23 | SP | 10 | 38 | 3.19 | 6.6 | 1.33 | *MLE | 20.6 | 5.09 | |
| 02/02/05 | 02:23 | 02:33 | SP | 10 | 48 | 4.03 | 6.63 | 1.28 | 759 | 20.6 | 5.15 | |
| 02/02/05 | 02:33 | 02:38 | SP | 5 | 53 | 4.45 | 6.68 | 1.28 | 466 | 20.9 | 3.86 | |
| 02/02/05 | 02:38 | 02:42 | SP | 5 | 58 | 4.86 | 6.7 | 1.28 | 289 | 20.8 | 5.66 | |
| 02/02/05 | 02:42 | 02:47 | SP | 5 | 63 | 5.28 | 6.7 | 1.26 | 255 | 20.9 | 4.11 | |

Report Form: WELL DEVELOPMENT 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

# SCS ENGINEERS — WELL DEVELOPMENT RECORD

WELL NUMBER: **MW-05**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |
| **PROJECT LOCATION** | **AIR TEMPERATURE** | **WEATHER** | **SUBCONTRACTOR** |
| **246 Ghilotti Avenue Santa Rosa, California** | **~63 °** | **Sunny** | **None** |

**METHOD**

HAND PUMP (HP) ____
SUBMERSIBLE PUMP (SP) X
BAILER (B) ____
SURGE BLOCK (SB) X

**DEVELOPMENT CRITERIA**

**Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized.**

**REMARKS**

*** Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).**

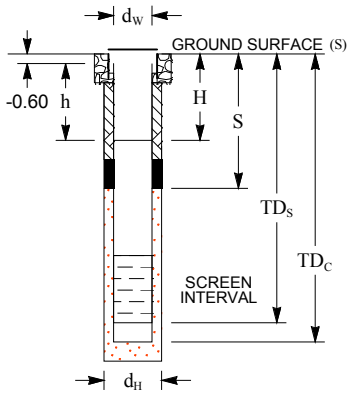
HOLE DIAMETER $d_H$ = **8.0**

WELL CASING
- INSIDE DIAM $d_WID$ = **2.0**
- OUTSIDE DIAM $d_WOD$ = **2.5**

DEPTH TO:
- WATER LEVEL h = **5.48**
- BASE OF SEAL S = **4.0**
- BASE OF SCREEN $TD_S$ = **20.2**
- BASE OF SUMP $TD_C$ = **20.2**

ESTIMATED FILTER PACK POROSITY P = **0.25**

Diameters in (inches) : Depths in (feet)




PURGE VOLUME CALCULATION

CASING VOLUME =

$$V_C = \pi \left(\frac{d_WID}{2}\right)^2 ( TD_C - H ) = 3.14 \left(\frac{0.17}{2}\right)^2 ( 20.2 - 6.1 )$$

$$= \mathbf{0.31\ ft^3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2}\right)^2 - \left(\frac{d_WOD}{2}\right)^2\right] ( TD_s - ( S \text{ or } H )^* )( P )$$

$$= \mathbf{1.11\ ft^3}$$

TOTAL WELL VOLUME =

$V_T = V_C + V_F =$ **1.42 ft³ x 7.48 gal/ft³ = 10.6 gal**

( * If S > H, use S; If S < H, use H )

| DEVELOPMENT LOG | | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/02/05 | 01:40 | 01:41 | SP | 1 | 1 | 0.09 | 6.89 | 1.34 | 898 | 18.9 | 5.71 | |
| 02/02/05 | 01:41 | 01:43 | SP | 2 | 3 | 0.28 | 6.75 | 1.22 | 630 | 18.3 | 6.44 | |
| 02/02/05 | 01:43 | 01:45 | SP | 2 | 5 | 0.47 | 6.63 | 1.19 | *MLE | 18.4 | 5.98 | |
| 02/02/05 | 01:45 | 01:47 | SP | 2 | 7 | 0.66 | 6.57 | 0.938 | *MLE | 18.5 | 3.91 | |
| 02/02/05 | 01:50 | 02:00 | SB | 0 | 7 | 0.66 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/02/05 | 02:50 | 02:55 | SP | 5 | 12 | 1.13 | 6.84 | 1.22 | 586 | 18 | 5.04 | |
| 02/02/05 | 02:55 | 03:00 | SP | 5 | 17 | 1.60 | 6.62 | 0.826 | *MLE | 18.3 | 5.16 | |
| 02/02/05 | 03:00 | 03:10 | SP | 10 | 27 | 2.54 | 6.58 | 0.742 | *MLE | 18.3 | 4.98 | |
| 02/02/05 | 03:10 | 03:20 | SP | 10 | 37 | 3.48 | 6.55 | 0.71 | 793 | 18.2 | 6.11 | |
| 02/02/05 | 03:20 | 03:25 | SP | 5 | 42 | 3.95 | 6.52 | 0.711 | 523 | 18.2 | 5.11 | |
| 02/02/05 | 03:25 | 03:30 | SP | 5 | 47 | 4.43 | 6.55 | 0.704 | 444 | 18.2 | 4.62 | |
| 02/02/05 | 03:30 | 03:40 | SP | 10 | 57 | 5.37 | 6.53 | 0.679 | 307 | 18.1 | 6.27 | |
| 02/02/05 | 03:40 | 03:45 | SP | 5 | 62 | 5.84 | 6.52 | 0.687 | 264 | 18.2 | 4.56 | |
| 02/02/05 | 03:45 | 03:50 | SP | 5 | 67 | 6.31 | 6.51 | 0.687 | 254 | 18.2 | 4.54 | |

Report Form: WELL DEVELOPMENT 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

**SCS ENGINEERS**

# WELL DEVELOPMENT RECORD

WELL NUMBER: **MW-06**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |
| **PROJECT LOCATION** | **AIR TEMPERATURE** | **WEATHER** | **SUBCONTRACTOR** |
| **246 Ghilotti Avenue Santa Rosa, California** | **~63 °** | **Sunny** | **None** |

METHOD

HAND PUMP (HP) _____
SUBMERSIBLE PUMP (SP) X
BAILER (B) _____
SURGE BLOCK (SB) X

DEVELOPMENT CRITERIA

**Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized.**

REMARKS

*** Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).**

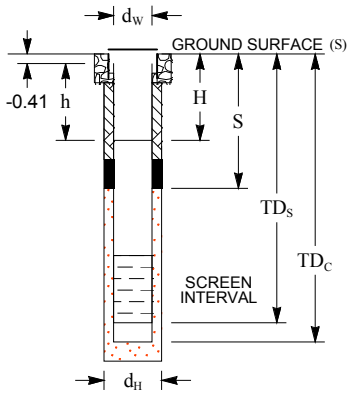
HOLE DIAMETER $d_H$ = **8.0**

WELL CASING
- INSIDE DIAM $d_WID$ = **2.0**
- OUTSIDE DIAM $d_WOD$ = **2.5**

DEPTH TO:
- WATER LEVEL h = **6.18**
- BASE OF SEAL S = **4.0**
- BASE OF SCREEN $TD_S$ = **20.3**
- BASE OF SUMP $TD_C$ = **20.3**

ESTIMATED FILTER PACK POROSITY P = **0.25**

Diameters in (inches) : Depths in (feet)




PURGE VOLUME CALCULATION

CASING VOLUME =

$$V_C = \pi \left(\frac{d_WID}{2}\right)^2 ( TD_C - H ) = 3.14 \left(\frac{0.17}{2}\right)^2 ( 20.3 - 6.6 )$$

$$= \mathbf{0.30\ ft^3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2}\right)^2 - \left(\frac{d_WOD}{2}\right)^2\right] ( TD_s - ( S \text{ or } H )^* )( P )$$

$$= \mathbf{1.08\ ft^3}$$

TOTAL WELL VOLUME =

$V_T = V_C + V_F =$ **1.38 ft $^3$ x 7.48 gal/ft $^3$ = 10.3 gal**

( * If S > H, use S; If S < H, use H )

| DEVELOPMENT LOG | | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/03/05 | 10:25 | 10:26 | SP | 1 | 1 | 0.10 | 7.06 | 1.66 | 846 | 17.4 | 6.84 | |
| 02/03/05 | 10:26 | 10:28 | SP | 2 | 3 | 0.29 | 6.69 | 1.28 | *MLE | 17.5 | 7.01 | |
| 02/03/05 | 10:28 | 10:30 | SP | 2 | 5 | 0.48 | 6.53 | 1.12 | *MLE | 17.6 | 6.14 | |
| 02/03/05 | 10:30 | 10:40 | SB | 0 | 5 | 0.48 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/03/05 | 10:47 | 10:52 | SP | 5 | 10 | 0.97 | 6.56 | 1.07 | 978 | 18.1 | 2.88 | |
| 02/03/05 | 10:52 | 11:02 | SP | 10 | 20 | 1.94 | 6.54 | 0.777 | *MLE | 18.1 | 3.51 | |
| 02/03/05 | 11:02 | 11:12 | SP | 10 | 30 | 2.91 | 6.39 | 0.756 | 739 | 18.3 | 4.68 | |
| 02/03/05 | 11:12 | 11:22 | SP | 10 | 40 | 3.88 | 6.43 | 0.74 | 291 | 18.2 | 4.35 | |
| 02/03/05 | 11:22 | 11:27 | SP | 5 | 45 | 4.36 | 6.41 | 0.731 | 209 | 18.3 | 3.69 | |
| 02/03/05 | 11:27 | 11:33 | SP | 5 | 50 | 4.85 | 6.45 | 0.726 | 160 | 18.3 | 3.63 | |
| 02/03/05 | 11:33 | 11:38 | SP | 5 | 55 | 5.33 | 6.42 | 0.725 | 119 | 18.3 | 3.55 | |

# SCS ENGINEERS — WELL DEVELOPMENT RECORD

WELL NUMBER: **MW-07**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |
| **PROJECT LOCATION** | **AIR TEMPERATURE** | **WEATHER** | **SUBCONTRACTOR** |
| **246 Ghilotti Avenue Santa Rosa, California** | **~63 °** | **Sunny** | **None** |

| METHOD | |
|---|---|
| HAND PUMP (HP) | |
| SUBMERSIBLE PUMP (SP) | X |
| BAILER (B) | |
| SURGE BLOCK (SB) | X |

*DEVELOPMENT CRITERIA*

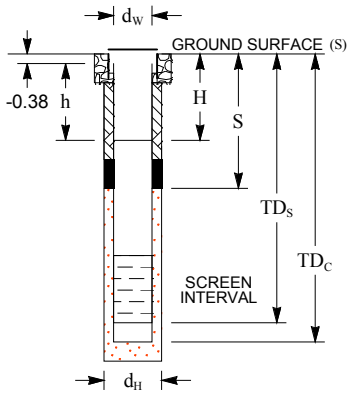
**Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized.**

*REMARKS*

*** Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).**

| | | | |
|---|---|---|---|
| HOLE DIAMETER | $d_H$ | = | 8.0 |
| WELL CASING | | | |
| INSIDE DIAM | $d_W ID$ | = | 2.0 |
| OUTSIDE DIAM | $d_W OD$ | = | 2.5 |
| DEPTH TO: | | | |
| WATER LEVEL | h | = | 5.54 |
| BASE OF SEAL | S | = | 4.0 |
| BASE OF SCREEN | $TD_S$ | = | 20.4 |
| BASE OF SUMP | $TD_C$ | = | 20.4 |
| ESTIMATED FILTER PACK POROSITY | P | = | 0.25 |

Diameters in (inches) : Depths in (feet)




PURGE VOLUME CALCULATION

CASING VOLUME =

$$V_C = \pi \left(\frac{d_W ID}{2}\right)^2 ( TD_C - H ) = 3.14 \left(\frac{0.17}{2}\right)^2 ( 20.4 - 5.9 )$$

$$= \mathbf{0.32\ ft^3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2}\right)^2 - \left(\frac{d_W OD}{2}\right)^2\right] ( TD_s - ( S \text{ or } H )^* )( P )$$

$$= \mathbf{1.14\ ft^3}$$

TOTAL WELL VOLUME =

$V_T = V_C + V_F =$ **1.46 ft³ x 7.48 gal/ft³ = 10.9 gal**

( * If S > H, use S; If S < H, use H )

| DEVELOPMENT LOG | | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/03/05 | 10:38 | 10:39 | SP | 1 | 1 | 0.09 | 6.85 | 2.47 | 967 | 19.2 | 6.85 | |
| 02/03/05 | 10:39 | 10:43 | SP | 3 | 4 | 0.37 | 6.84 | 2.14 | *MLE | 19.3 | 7.84 | |
| 02/03/05 | 10:43 | 10:46 | SP | 3 | 7 | 0.64 | 6.78 | 1.92 | *MLE | 19.6 | 4.39 | |
| 02/03/05 | 11:30 | 11:40 | SB | 0 | 7 | 0.64 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/03/05 | 11:42 | 12:02 | SP | 20 | 27 | 2.48 | 6.85 | 1.48 | *MLE | 20.2 | 2.65 | |
| 02/03/05 | 12:02 | 12:12 | SP | 10 | 37 | 3.40 | 6.84 | 1.59 | *MLE | 20 | 2.95 | |
| 02/03/05 | 12:12 | 12:22 | SP | 10 | 47 | 4.32 | 6.78 | 1.56 | *MLE | 20.2 | 3.67 | |
| 02/03/05 | 12:22 | 12:32 | SP | 10 | 57 | 5.23 | 6.82 | 1.51 | *MLE | 20.2 | 4.29 | |
| 02/03/05 | 12:32 | 12:37 | SP | 5 | 62 | 5.69 | 6.79 | 1.49 | 395 | 20.2 | 4.5 | |
| 02/03/05 | 12:37 | 12:43 | SP | 5 | 67 | 6.15 | 6.77 | 1.49 | 269 | 20.2 | 2.6 | |

# SCS ENGINEERS — WELL DEVELOPMENT RECORD

| WELL NUMBER | PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|---|
| MW-08 | Ghilotti Construction Company | 01203312.00 | 246 Ghilotti Avenue | Jason Greenlee |

| PROJECT LOCATION | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR |
|---|---|---|---|
| 246 Ghilotti Avenue Santa Rosa, California | ~63 ° | Sunny | None |

**METHOD**

HAND PUMP (HP) _____
SUBMERSIBLE PUMP (SP) X
BAILER (B) _____
SURGE BLOCK (SB) X

**DEVELOPMENT CRITERIA**

**Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized.**

**REMARKS**

*** Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).**

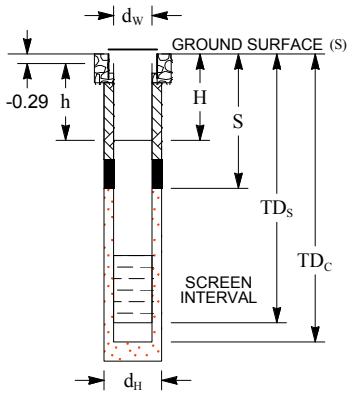
HOLE DIAMETER $d_H$ = **8.0**

WELL CASING
- INSIDE DIAM $d_WID$ = **2.0**
- OUTSIDE DIAM $d_WOD$ = **2.5**

DEPTH TO:
- WATER LEVEL h = **3.25**
- BASE OF SEAL S = **4.0**
- BASE OF SCREEN $TD_S$ = **20.3**
- BASE OF SUMP $TD_C$ = **20.3**

ESTIMATED FILTER PACK POROSITY P = **0.25**

Diameters in (inches) : Depths in (feet)




PURGE VOLUME CALCULATION

CASING VOLUME =

$$V_C = \pi \left(\frac{d_WID}{2}\right)^2 ( TD_C - H ) = 3.14 \left(\frac{0.17}{2}\right)^2 ( 20.3 - 3.5 )$$

$$= \mathbf{0.37\ ft^3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2}\right)^2 - \left(\frac{d_WOD}{2}\right)^2\right] ( TD_s - ( S \text{ or } H )^* )( P )$$

$$= \mathbf{1.28\ ft^3}$$

TOTAL WELL VOLUME =

$V_T = V_C + V_F =$ **1.65 ft $^3$ x 7.48 gal/ft $^3$ = 12.3 gal**

( * If S > H, use S; If S < H, use H )

| DEVELOPMENT LOG | | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/03/05 | 02:19 | 02:27 | SP | 8 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | |
| 02/03/05 | 02:35 | 02:45 | SB | 0 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/03/05 | 02:45 | 02:50 | SP | 5 | 13 | 1.05 | 7.25 | 2.27 | *MLE | 18.6 | 2.75 | |
| 02/03/05 | 02:50 | 03:10 | SP | 20 | 33 | 2.68 | 6.81 | 1.66 | 669 | 18.6 | 3.36 | |
| 02/03/05 | 03:10 | 03:30 | SP | 20 | 53 | 4.30 | 6.86 | 1.58 | *MLE | 18.5 | 6.6 | |
| 02/03/05 | 03:30 | 03:54 | SP | 20 | 73 | 5.92 | 6.75 | 1.51 | *MLE | 18.3 | 6.35 | |

Report Form: WELL DEVELOPMENT 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

# SCS ENGINEERS — WELL DEVELOPMENT RECORD

WELL NUMBER: **MW-09**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |
| **PROJECT LOCATION** | **AIR TEMPERATURE** | **WEATHER** | **SUBCONTRACTOR** |
| **246 Ghilotti Avenue Santa Rosa, California** | **~63 °** | **Overcast** | **None** |

**METHOD**

HAND PUMP (HP) ____
SUBMERSIBLE PUMP (SP) **X**
BAILER (B) ____
SURGE BLOCK (SB) **X**

**DEVELOPMENT CRITERIA**

**Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized.**

**REMARKS**

*** Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).**

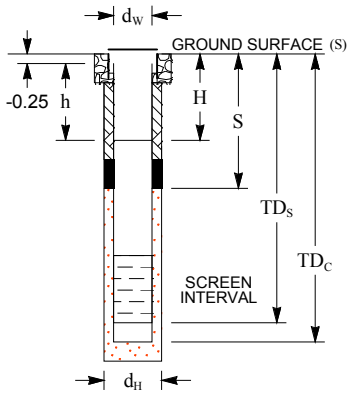
HOLE DIAMETER $d_H$ = **8.0**

WELL CASING
- INSIDE DIAM $d_WID$ = **2.0**
- OUTSIDE DIAM $d_WOD$ = **2.5**

DEPTH TO:
- WATER LEVEL h = **4.06**
- BASE OF SEAL S = **4.0**
- BASE OF SCREEN $TD_S$ = **20.3**
- BASE OF SUMP $TD_C$ = **20.3**

ESTIMATED FILTER PACK POROSITY P = **0.25**

Diameters in (inches) : Depths in (feet)




PURGE VOLUME CALCULATION

CASING VOLUME =

$$V_C = \pi \left(\frac{d_WID}{2}\right)^2 ( TD_C - H ) = 3.14 \left(\frac{0.17}{2}\right)^2 ( 20.3 - 4.3 )$$

$$= \mathbf{0.35\ ft^3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2}\right)^2 - \left(\frac{d_WOD}{2}\right)^2\right] ( TD_s - ( S \text{ or } H )^* )( P )$$

$$= \mathbf{1.26\ ft^3}$$

TOTAL WELL VOLUME =

$V_T = V_C + V_F =$ **1.61 ft³ x 7.48 gal/ft³ = 12.0 gal**

( * If S > H, use S; If S < H, use H )

| DEVELOPMENT LOG | | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/04/05 | 11:50 | 11:55 | SP | 7 | 7 | 0.58 | n.a. | n.a. | n.a. | n.a. | n.a. | |
| 02/04/05 | 11:55 | 12:05 | SB | 0 | 7 | 0.58 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/04/05 | 12:05 | 12:25 | SP | 20 | 27 | 2.24 | 6.94 | 1.45 | 551 | 17.4 | 7.85 | |
| 02/04/05 | 12:25 | 12:45 | SP | 20 | 47 | 3.91 | 6.86 | 0.889 | *MLE | 17.1 | 9.07 | |
| 02/04/05 | 12:45 | 12:55 | SP | 10 | 57 | 4.74 | 6.83 | 0.833 | 622 | 16.9 | 9.8 | |
| 02/04/05 | 12:55 | 13:05 | SP | 10 | 67 | 5.57 | 6.69 | 0.837 | *MLE | 17 | 9.84 | |
| 02/04/05 | 13:05 | 13:10 | SP | 5 | 72 | 5.99 | 6.64 | 0.819 | *MLE | 17.3 | 9.78 | |
| 02/04/05 | 13:10 | 13:15 | SP | 5 | 77 | 6.40 | 6.59 | 0.815 | 570 | 17.3 | 9.08 | |
| 02/04/05 | 13:15 | 13:18 | SP | 3 | 80 | 6.65 | 6.58 | 0.817 | 427 | 17.3 | 9.91 | |
| 02/04/05 | 13:18 | 13:20 | SP | 2 | 82 | 6.82 | 6.58 | 0.816 | 312 | 17.3 | 9.06 | |

Report Form: WELL DEVELOPMENT 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

# SCS ENGINEERS — WELL DEVELOPMENT RECORD

| WELL NUMBER | PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|---|
| MW-10 | Ghilotti Construction Company | 01203312.00 | 246 Ghilotti Avenue | Amy Yardley |

| PROJECT LOCATION | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR |
|---|---|---|---|
| 246 Ghilotti Avenue Santa Rosa, California | ~63 ° | Overcast | None |

**METHOD**

HAND PUMP (HP) _____
SUBMERSIBLE PUMP (SP) X
BAILER (B) _____
SURGE BLOCK (SB) X

**DEVELOPMENT CRITERIA**

**Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized.**

**REMARKS**

*** Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).**

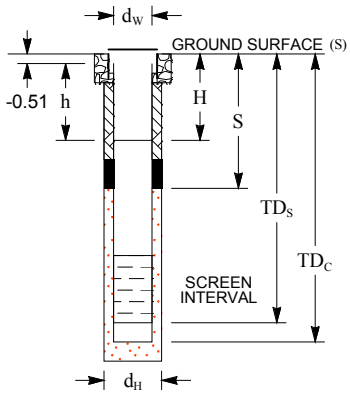
HOLE DIAMETER $d_H$ = **8.0**

WELL CASING
- INSIDE DIAM $d_WID$ = **2.0**
- OUTSIDE DIAM $d_WOD$ = **2.5**

DEPTH TO:
- WATER LEVEL h = **3.67**
- BASE OF SEAL S = **4.0**
- BASE OF SCREEN $TD_S$ = **20.5**
- BASE OF SUMP $TD_C$ = **20.5**

ESTIMATED FILTER PACK POROSITY P = **0.25**

Diameters in (inches) : Depths in (feet)




PURGE VOLUME CALCULATION

CASING VOLUME =

$$V_C = \pi \left(\frac{d_WID}{2}\right)^2 ( TD_C - H ) = 3.14 \left(\frac{0.17}{2}\right)^2 ( 20.5 - 4.2 )$$

$$= \mathbf{0.36\ ft^3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2}\right)^2 - \left(\frac{d_WOD}{2}\right)^2\right] ( TD_s - ( S \text{ or } H )^* )( P )$$

$$= \mathbf{1.29\ ft^3}$$

TOTAL WELL VOLUME =

$V_T = V_C + V_F =$ **1.64 ft $^3$ x 7.48 gal/ft $^3$ = 12.3 gal**

( * If S > H, use S; If S < H, use H )

| DEVELOPMENT LOG | | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/04/05 | 10:00 | 10:08 | SP | 8 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | |
| 02/04/05 | 10:10 | 10:20 | SB | 0 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/04/05 | 10:20 | 10:40 | SP | 20 | 28 | 2.28 | 7.11 | 1.58 | 498 | 18.4 | 7.37 | |
| 02/04/05 | 10:40 | 10:50 | SP | 10 | 38 | 3.10 | 6.96 | 1.32 | *MLE | 18.2 | 8.51 | |
| 02/04/05 | 10:50 | 11:00 | SP | 10 | 48 | 3.91 | 6.94 | 1.32 | *MLE | 17.8 | 8.55 | |
| 02/04/05 | 11:00 | 11:10 | SP | 10 | 58 | 4.72 | 6.89 | 1.28 | *MLE | 17.8 | 7.96 | |
| 02/04/05 | 11:10 | 11:15 | SP | 5 | 63 | 5.13 | 6.83 | 1.25 | 880 | 18.3 | 6.86 | |
| 02/04/05 | 11:15 | 11:20 | SP | 5 | 68 | 5.54 | 6.79 | 1.25 | 790 | 18.7 | 7.83 | |
| 02/04/05 | 11:20 | 11:25 | SP | 5 | 73 | 5.95 | n.a. | n.a. | n.a. | n.a. | n.a. | Went dry |

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

*WELL NUMBER* **MW- 1**

| *PROJECT* | *JOB NUMBER* | *SITE* | *RECORDED BY* |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | *PURGING METHOD* | *SAMPLING METHOD* |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

*PURGING CRITERIA* **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

*REMARKS*

*** Oil/water interface probe used to check for NAPLs. Well as builts were unavailable, parameters were estimated.**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 4.90

NAPL: n.a.*

NAPL THICKNESS: n.a.*

SCREEN DEPTH:

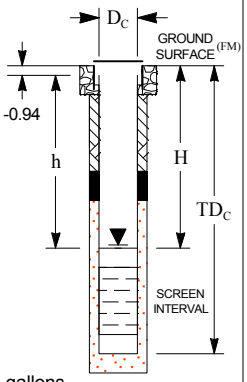
TOP: 9.0

BOTTOM: 19.0

TOTAL DEPTH ($TD_C$): 19.00

Diameters in (inches) : Depths in (feet)

ONE CASING VOLUME:
[$TD_C$ - H] [3.14 ($D_C$ / 2)$^2$] [7.48 gal/ft$^3$]: 2.15 gallons




| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 4.89 / 4.9 |
| TAGGED WELL DEPTH FROM TOC: | 17.86 |
| PURGE VOLUME (3 CASING VOLUMES): | 6.4 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 7.53 ft. below TOC |
| TIME OF SAMPLING: | 15:15 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 5.16 ft. below TOC |
| APPEARANCE OF SAMPLE: | Clear |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **13:36** | **13:37** | **1** | **1** | **0.47** | **7.26** | **0.731** | **10** | **18.5** | **0.52** | |
| **2/11/05** | **13:37** | **13:39** | **2** | **3** | **1.40** | **7.13** | **0.739** | **10** | **18.2** | **0.47** | |
| **2/11/05** | **13:39** | **13:41** | **2** | **5** | **2.33** | **7.04** | **0.744** | **10** | **18.2** | **0.32** | |
| **2/11/05** | **13:41** | **13:44** | **2** | **7** | **3.26** | **6.98** | **0.741** | **10** | **18.4** | **0.23** | |
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Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

WELL NUMBER: **MW- 2**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | PURGING METHOD | SAMPLING METHOD |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

PURGING CRITERIA: **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

REMARKS

*** Oil/water interface probe used to check for NAPLs. Well as builts were unavailable, parameters were estimated.**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 5.21

NAPL: n.a.*

NAPL THICKNESS: n.a.*

SCREEN DEPTH:

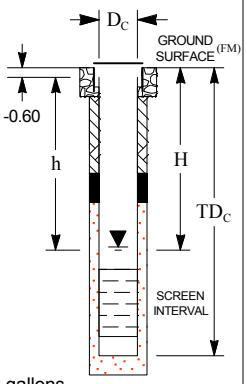
TOP: 7.0

BOTTOM: 17.0

TOTAL DEPTH ($TD_C$): 17.00

Diameters in (inches) : Depths in (feet)

ONE CASING VOLUME:
[$TD_C$ - H] [3.14 ($D_C$ / 2)$^2$] [7.48 gal/ft$^3$]: 1.83 gallons




| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 5.21 / 5.21 |
| TAGGED WELL DEPTH FROM TOC: | 16.45 |
| PURGE VOLUME (3 CASING VOLUMES): | 5.5 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 7.45 ft. below TOC |
| TIME OF SAMPLING: | 15:30 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 6.02 ft. below TOC |
| APPEARANCE OF SAMPLE: | Clear |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **13:58** | **13:59** | **1** | **1** | **0.55** | **7.09** | **0.696** | **10** | **16.7** | **0.88** | |
| **2/11/05** | **13:59** | **14:01** | **2** | **3** | **1.64** | **7.03** | **0.755** | **10** | **16.7** | **0.32** | |
| **2/11/05** | **14:01** | **14:05** | **3** | **6** | **3.29** | **7.03** | **0.774** | **10** | **17.2** | **0.24** | |

Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

WELL NUMBER: **MW- 3**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | PURGING METHOD | SAMPLING METHOD |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

PURGING CRITERIA: **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

REMARKS

*** Oil/water interface probe used to check for NAPLs. Well as builts were unavailable, parameters were estimated.**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 4.86

NAPL: n.a.*

NAPL THICKNESS: n.a.*

SCREEN DEPTH:

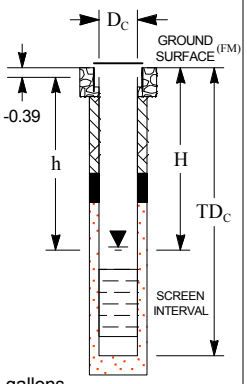
TOP: 9.0

BOTTOM: 19.0

TOTAL DEPTH ($TD_C$): 19.00

Diameters in (inches) : Depths in (feet)

ONE CASING VOLUME:
[$TD_C$ - H] [3.14 ($D_C$ / 2)$^2$] [7.48 gal/ft$^3$]: 2.24 gallons




| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 4.86 / 4.86 |
| TAGGED WELL DEPTH FROM TOC: | 18.12 |
| PURGE VOLUME (3 CASING VOLUMES): | 6.7 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 7.61 ft. below TOC |
| TIME OF SAMPLING: | 12:00 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 4.94 ft. below TOC |
| APPEARANCE OF SAMPLE: | Clear |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **11:07** | **11:08** | **1** | **1** | **0.45** | **7.43** | **0.663** | **10** | **16.9** | **0.90** | |
| **2/11/05** | **11:08** | **11:10** | **2** | **3** | **1.34** | **7.29** | **0.602** | **10** | **16.8** | **0.36** | |
| **2/11/05** | **11:10** | **11:13** | **2** | **5** | **2.23** | **7.23** | **0.651** | **10** | **17.1** | **0.52** | |
| **2/11/05** | **11:13** | **11:15** | **2** | **7** | **3.12** | **7.22** | **0.667** | **10** | **17.5** | **0.28** | |
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Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

WELL NUMBER: **MW-04**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | PURGING METHOD | SAMPLING METHOD |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

PURGING CRITERIA: **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

REMARKS

*** Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's).**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 3.87

NAPL: n.a.*

NAPL THICKNESS: n.a.*

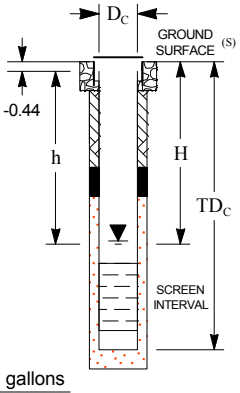
SCREEN DEPTH:

TOP: 5.1

BOTTOM: 20.1

TOTAL DEPTH ($TD_C$): 20.10

Diameters in (inches) : Depths in (feet)




ONE CASING VOLUME:
$[TD_C - H] [3.14 (D_C / 2)^2] [7.48 gal/ft^3]$: 2.58 gallons

| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 3.86 / 3.87 |
| TAGGED WELL DEPTH FROM TOC: | 19.71 |
| PURGE VOLUME (3 CASING VOLUMES): | 7.7 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 7.03 ft. below TOC |
| TIME OF SAMPLING: | 14:20 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 4.16 ft. below TOC |
| APPEARANCE OF SAMPLE: | Cloudy |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **12:20** | **12:22** | **2** | **2** | **0.78** | **7.24** | **1.140** | ***MLE** | **19.6** | **0.35** | |
| **2/11/05** | **12:22** | **12:24** | **2** | **4** | **1.55** | **7.12** | **0.844** | ***MLE** | **19.8** | **0.43** | |
| **2/11/05** | **12:24** | **12:27** | **2** | **6** | **2.33** | **7.05** | **0.823** | ***MLE** | **19.8** | **0.40** | |
| **2/11/05** | **12:27** | **12:29** | **2** | **8** | **3.10** | **7.02** | **0.823** | ***MLE** | **19.9** | **0.28** | |

Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

*WELL NUMBER* **MW-05**

| *PROJECT* | *JOB NUMBER* | *SITE* | *RECORDED BY* |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | *PURGING METHOD* | *SAMPLING METHOD* |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

*PURGING CRITERIA* **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

*REMARKS*

*** Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's).**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 5.52

NAPL: n.a.*

NAPL THICKNESS: n.a.*

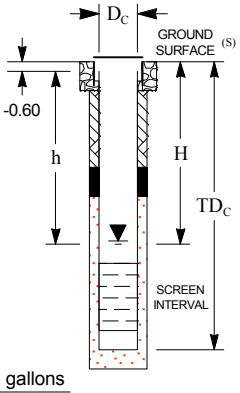
SCREEN DEPTH:

TOP: 5.2

BOTTOM: 20.2

TOTAL DEPTH ($TD_C$): 20.20

Diameters in (inches) : Depths in (feet)




ONE CASING VOLUME:
$[TD_C - H] [3.14 (D_C / 2)^2] [7.48 gal/ft^3]$: 2.30 gallons

| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 5.52 / 5.52 |
| TAGGED WELL DEPTH FROM TOC: | 19.76 |
| PURGE VOLUME (3 CASING VOLUMES): | 6.9 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 8.34 ft. below TOC |
| TIME OF SAMPLING: | 14:20 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 6.13 ft. below TOC |
| APPEARANCE OF SAMPLE: | Cloudy |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **12:37** | **12:38** | **1** | **1** | **0.44** | **7.06** | **0.468** | ***MLE** | **18.1** | **0.42** | |
| **2/11/05** | **12:38** | **12:40** | **2** | **3** | **1.31** | **6.94** | **0.480** | ***MLE** | **17.8** | **0.33** | |
| **2/11/05** | **12:40** | **12:42** | **2** | **5** | **2.18** | **6.90** | **0.479** | ***MLE** | **17.7** | **0.34** | |
| **2/11/05** | **12:42** | **12:44** | **2** | **7** | **3.05** | **6.85** | **0.481** | ***MLE** | **17.7** | **0.25** | |

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

*WELL NUMBER* **MW-06**

| *PROJECT* | *JOB NUMBER* | *SITE* | *RECORDED BY* |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | *PURGING METHOD* | *SAMPLING METHOD* |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

*PURGING CRITERIA* **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

*REMARKS*

*** Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's).**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 6.23

NAPL: n.a.*

NAPL THICKNESS: n.a.*

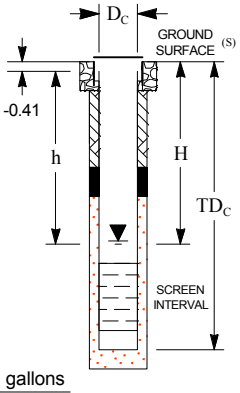
SCREEN DEPTH:

TOP: 5.3

BOTTOM: 20.3

TOTAL DEPTH ($TD_C$): 20.30

Diameters in (inches) : Depths in (feet)




ONE CASING VOLUME:
$[TD_C - H] [3.14 (D_C / 2)^2] [7.48 gal/ft^3]$: 2.23 gallons

| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 6.21 / 6.23 |
| TAGGED WELL DEPTH FROM TOC: | 20.06 |
| PURGE VOLUME (3 CASING VOLUMES): | 6.7 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 8.96 ft. below TOC |
| TIME OF SAMPLING: | 14:50 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 6.45 ft. below TOC |
| APPEARANCE OF SAMPLE: | Very cloudy |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **12:58** | **12:59** | **1** | **1** | **0.45** | **6.94** | **0.648** | ***MLE** | **18.3** | **0.73** | |
| **2/11/05** | **12:59** | **13:02** | **2** | **3** | **1.35** | **6.85** | **0.617** | ***MLE** | **17.9** | **0.35** | |
| **2/11/05** | **13:02** | **13:04** | **2** | **5** | **2.24** | **6.81** | **0.584** | ***MLE** | **17.8** | **0.38** | |
| **2/11/05** | **13:04** | **13:06** | **2** | **7** | **3.14** | **6.78** | **0.569** | **713** | **17.9** | **0.36** | |

Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

WELL NUMBER: **MW-07**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | PURGING METHOD | SAMPLING METHOD |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

PURGING CRITERIA: **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

REMARKS

*** Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's).**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 5.57

NAPL: n.a.*

NAPL THICKNESS: n.a.*

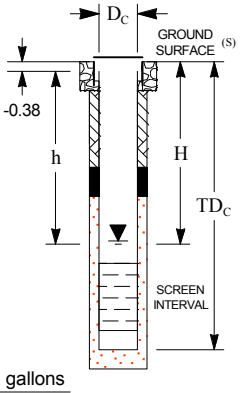
SCREEN DEPTH:

TOP: 5.4

BOTTOM: 20.4

TOTAL DEPTH ($TD_C$): 20.40

Diameters in (inches) : Depths in (feet)




ONE CASING VOLUME:
$[TD_C - H] [3.14 (D_C / 2)^2] [7.48 gal/ft^3]$: 2.36 gallons

| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 5.59 / 5.57 |
| TAGGED WELL DEPTH FROM TOC: | 20.35 |
| PURGE VOLUME (3 CASING VOLUMES): | 7.1 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 8.46 ft. below TOC |
| TIME OF SAMPLING: | 15:05 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 5.68 ft. below TOC |
| APPEARANCE OF SAMPLE: | Cloudy |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **13:18** | **13:19** | **1** | **1** | **0.42** | **7.13** | **0.964** | ***MLE** | **18.8** | **0.74** | |
| **2/11/05** | **13:19** | **13:21** | **2** | **3** | **1.27** | **7.13** | **1.260** | ***MLE** | **19.1** | **0.32** | |
| **2/11/05** | **13:21** | **13:23** | **2** | **5** | **2.12** | **7.10** | **1.230** | **620** | **19.3** | **0.23** | |
| **2/11/05** | **13:23** | **13:25** | **2** | **7** | **2.97** | **7.07** | **1.210** | **363** | **19.5** | **0.17** | |
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Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

*WELL NUMBER* **MW-08**

| *PROJECT* | *JOB NUMBER* | *SITE* | *RECORDED BY* |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | *PURGING METHOD* | *SAMPLING METHOD* |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

*PURGING CRITERIA* **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

*REMARKS*

*** Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's).**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 3.89

NAPL: n.a.*

NAPL THICKNESS: n.a.*

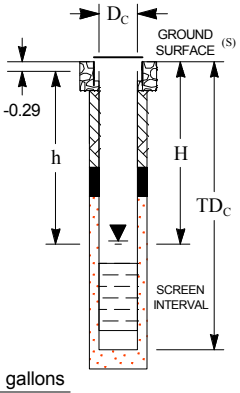
SCREEN DEPTH:

TOP: 5.3

BOTTOM: 20.3

TOTAL DEPTH ($TD_C$): 20.30

Diameters in (inches) : Depths in (feet)




ONE CASING VOLUME:
$[TD_C - H] [3.14 (D_C / 2)^2] [7.48 gal/ft^3]$: 2.63 gallons

| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 3.88 / 3.89 |
| TAGGED WELL DEPTH FROM TOC: | 20.26 |
| PURGE VOLUME (3 CASING VOLUMES): | 7.9 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 7.11 ft. below TOC |
| TIME OF SAMPLING: | 12:10 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 4.02 ft. below TOC |
| APPEARANCE OF SAMPLE: | Very cloudy |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **11:42** | **11:44** | **2** | **2** | **0.76** | **7.29** | **1.230** | ***MLE** | **17.2** | **0.24** | |
| **2/11/05** | **11:44** | **11:46** | **2** | **4** | **1.52** | **7.24** | **1.260** | **815** | **16.7** | **0.38** | |
| **2/11/05** | **11:46** | **11:48** | **2** | **6** | **2.28** | **7.24** | **1.260** | **524** | **16.8** | **0.37** | |
| **2/11/05** | **11:48** | **11:51** | **2** | **8** | **3.04** | **7.18** | **1.260** | **268** | **16.9** | **0.14** | |

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

WELL NUMBER: **MW-09**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | PURGING METHOD | SAMPLING METHOD |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

PURGING CRITERIA: **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

REMARKS

*** Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's).**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 4.02

NAPL: n.a.*

NAPL THICKNESS: n.a.*

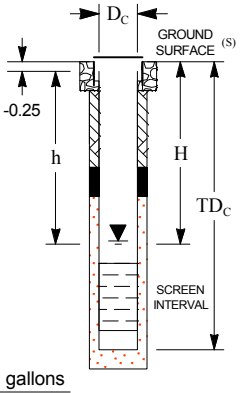
SCREEN DEPTH:

TOP: 5.3

BOTTOM: 20.3

TOTAL DEPTH ($TD_C$): 20.30

Diameters in (inches) : Depths in (feet)




ONE CASING VOLUME:
$[TD_C - H] [3.14 (D_C / 2)^2] [7.48 gal/ft^3]$: 2.62 gallons

| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 4.03 / 4.02 |
| TAGGED WELL DEPTH FROM TOC: | 20.35 |
| PURGE VOLUME (3 CASING VOLUMES): | 7.8 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 7.23 ft. below TOC |
| TIME OF SAMPLING: | 12:05 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 4.91 ft. below TOC |
| APPEARANCE OF SAMPLE: | Very cloudy |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **11:23** | **11:25** | **2** | **2** | **0.76** | **7.34** | **0.629** | **723** | **16.8** | **0.34** | |
| **2/11/05** | **11:25** | **11:27** | **2** | **4** | **1.53** | **7.16** | **0.650** | **770** | **16.5** | **0.27** | |
| **2/11/05** | **11:27** | **11:29** | **2** | **6** | **2.29** | **7.09** | **0.682** | ***MLE** | **16.4** | **0.32** | |
| **2/11/05** | **11:29** | **11:31** | **2** | **8** | **3.06** | **7.08** | **0.687** | ***MLE** | **16.5** | **0.44** | |

Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

SCS ENGINEERS

# WELL PURGE RECORD

**2005 - 1st Quarter**

WELL NUMBER: **MW-10**

| PROJECT | JOB NUMBER | SITE | RECORDED BY |
|---|---|---|---|
| **Ghilotti Construction Company** | **01203312.00** | **246 Ghilotti Avenue** | **Amy Yardley** |

| | PURGING METHOD | SAMPLING METHOD |
|---|---|---|
| HAND PUMP | | |
| SUBMERSIBLE PUMP | X | |
| BAILER | | X |
| OTHER | | |

PURGING CRITERIA: **Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry.**

REMARKS

*** Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's).**

CASING DIAMETER ($D_C$): 2.0

DEPTH TO:

WATER (h): 3.73

NAPL: n.a.*

NAPL THICKNESS: n.a.*

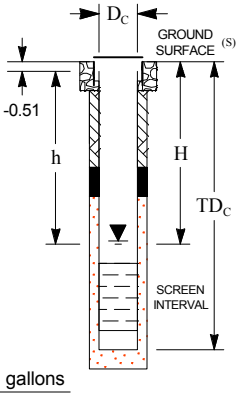
SCREEN DEPTH:

TOP: 5.5

BOTTOM: 20.5

TOTAL DEPTH ($TD_C$): 20.50

Diameters in (inches) : Depths in (feet)




ONE CASING VOLUME:
$[TD_C - H] [3.14 (D_C / 2)^2] [7.48 gal/ft^3]$: 2.65 gallons

| | |
|---|---|
| DATE OF SAMPLING: | 2/11/2005 |
| WEATHER: | Sunny |
| TAGGED WATER LEVELS FROM TOC: | 3.71 / 3.73 |
| TAGGED WELL DEPTH FROM TOC: | 20.3 |
| PURGE VOLUME (3 CASING VOLUMES): | 8.0 gallons |
| DEPTH TO WATER FOR 80% RECHARGE: | 6.98 ft. below TOC |
| TIME OF SAMPLING: | 11:55 |
| DEPTH TO WATER AT TIME OF SAMPLING: | 3.76 ft. below TOC |
| APPEARANCE OF SAMPLE: | Cloudy |
| LABORATORY: | Analytical Sciences |

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

| PURGING DATA | | | | CUMULATIVE TOTAL REMOVED | | WATER CHARACTERISTICS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | TIME BEGIN | TIME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pH | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| **2/11/05** | **10:45** | **10:47** | **2** | **2** | **0.75** | **7.60** | **1.140** | **396** | **17.1** | **0.93** | |
| **2/11/05** | **10:47** | **10:49** | **2** | **4** | **1.51** | **7.47** | **0.868** | **464** | **17.0** | **0.62** | |
| **2/11/05** | **10:49** | **10:51** | **2** | **6** | **2.26** | **7.39** | **0.874** | ***MLE** | **17.2** | **0.22** | |
| **2/11/05** | **10:51** | **10:53** | **2** | **8** | **3.01** | **7.37** | **0.859** | ***MLE** | **17.5** | **0.30** | |
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Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

# APPENDIX D

## WELL SURVEY REPORT

**JACOBS LAND SURVEYING**
**1625 PERSEUS CT.**
**PETALUMA, CA. 94954**
**(707) 782-0733**

**DATE:** 03-10-05

**Job # 05-1033-S**

**TO:** SCS Engineers
3645 Westwind Blvd.
Santa Rosa, California 95403

**RE: Ghilotti Construction**
246 Ghilotti Ave.
Santa Rosal, Ca.
**Your Job No.** 3312.00

On 03-09-05 this office ran a closed level loop with a Zeiss Ni2 Auto Level from City of Santa Rosa Benchmark, D-230, a PK nail in the curb at the northerly end of a catch basin at the Northwest corner of Todd Rd. and Standish Ave., elevation 99.021, NGVD 1929 datum, yielding the following well elevations.

| MW# | Rim | Top Casing | Comments |
|---|---|---|---|
| MW-4 | 98.75 | 98.31 | (A) (N) |
| MW-5 | 100.80 | 100.20 | (SL) (N) |
| MW-6 | 101.36 | 100.95 | (SL) (N) |
| MW-7 | 100.55 | 100.17 | (A) (N) notched |
| MW-8 | 98.66 | 98.37 | (SL) (N) (P) |
| MW-9 | 98.71 | 98.46 | (SL) (N) (P) |
| MW-10 | 98.55 | 98.04 | (SL) (N) |

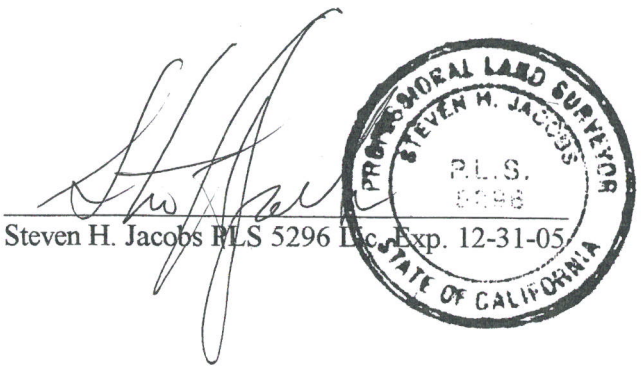
**KEY**

| | | |
|---|---|---|
| (A) = Allen head bolt | (SL) = Slot | (S) = Small bolt |
| (N)(E)(S)(W) = Direction | (B) = Black mark | (BN)=Black mark/notch |
| (M) = Missing/stripped bolt | (OC) = Outer casing | (HP) = High point |
| (P)= Pressure | (OG) = Original grade | |

**Temporary Benchmark**: Set spike in power pole opposite northerly Ghilotti gate, elevation 99.73.

**REMARKS:**

All wells recovered and observed were in good condition and were resealed as found.




Steven H. Jacobs PLS 5296 Lic. Exp. 12-31-05